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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

<p>Nikola Corp.,</p> <p style="text-align: right;">Plaintiff,</p> <p style="text-align: center;">vs.</p> <p>Tesla, Inc.,</p> <p style="text-align: right;">Defendant.</p>	<p>Case Number: 3:18-CV-07460-JD</p> <p>PLAINTIFF NIKOLA CORP.'S OPENING CLAIM CONSTRUCTION BRIEF PURSUANT TO LOCAL PATENT RULE 4.2</p> <p>Hon. James Donato</p>
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TABLE OF CONTENTS

I.	The Asserted Patents.....	1
A.	The ‘084 Patent: Systems, methods, and devices for a vehicle door or window.	1
B.	Tesla filed an <i>inter partes</i> review petition challenging the ‘084 Patent on 24 September 2019.	3
II.	Claim Construction Framework.....	4
III.	Proposed Claim Terms and Nikola’s Proposed Constructions.	6
	1. Claim Term 1: A rearmost portion / A rearmost portion of a front wheel well.	6
	2. Claim Term 2: A line defining the rearmost portion of the front wheel well.	10
	3. Claim Term 3: At least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well.	12
	4. Claim Term 4: Adjacent to.	14
	5. Claim Term 5: A frontmost side of the door is adjacent to a rearmost portion of a front wheel well.....	15
	6. Claim Term 6: The door is located approximately at a midpoint of the body.....	17
	7. Claim Term 7: Full-size step.....	18
IV.	Conclusion.	20

Pursuant to Local Patent Rule 4.5(a), Plaintiff Nikola, Corp. hereby respectfully submits this Opening Claim Construction Brief in support of Nikola's proposed constructions for the claim terms in dispute.

I. THE ASSERTED PATENTS.

Defendant's Tesla Semi infringes four Nikola patents: U.S. Patent Nos. 10,077,084; D811,944; D811,968; and D816,004 (the "Asserted Patents"). Each of the Asserted Patents relate to the Nikola One semi-truck. The Asserted patents can be grouped into two categories. First, the 10,077,084 Patent ("the '084 Patent") concerns the relative position of a door. Second, the D811,944, D811,968 and D816,004 patents focus on the ornamental design of a semi-truck.¹ The only patent at issue for claim construction is the '084 Patent.²

A. The '084 Patent: Systems, methods, and devices for a vehicle door or window.

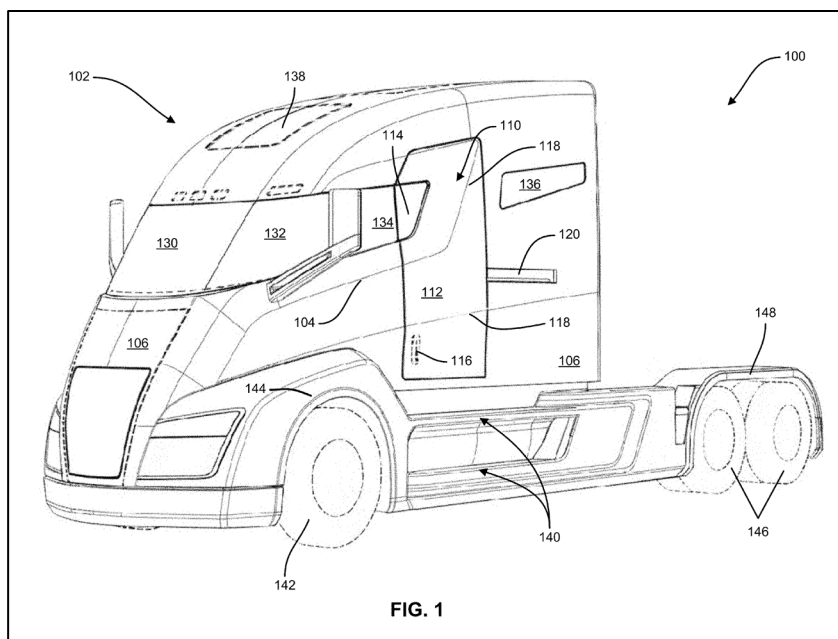
The '084 Patent application was filed on December 30, 2016, was issued on September 18, 2018, and claims priority to another application filed on November 21, 2016. The '084 Patent describes a vehicle that includes a vehicle body and a cabin located within the body of the vehicle, wherein the cabin includes an interior that is configured to accommodate at least one person. The vehicle includes at least one seat located in the interior of the cabin that is configured for seating a user. The vehicle also includes at least one door that provides ingress and egress to the interior

¹ The Court has previously held that it would not construe the design patents and does not need to do so now.

² Attached as Exhibit A.

of the cabin of the vehicle, and the at least one door is located with respect to the body such that the door opens to provide ingress and egress into the cabin from a backside of the seat.³

In addition, the '084 Patent describes that the door is located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well, that at least a portion of the door is positioned behind the seat, and that at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well.⁴ A representation of the invention can be seen in FIG. 1, reproduced below.



The vehicle (100) is an electric driven semi-truck (100) having a vehicle body (102), a plurality of front wheels (142), a plurality of front wheel wells (144), a plurality of rear wheels (146), a plurality of rear wheel wells (148), and an electric motor and associated gear train at every

³ The '084 Patent (Exhibit A) at Abstract.

⁴ *Id* at Claim 1 and FIG. 1.

wheel (142). The vehicle (100) includes an aerodynamic door (110) that includes an integrated door window (114) and a door handle (116). The vehicle body (102) includes an aerodynamic front windshield (130) and panoramic windows (132) on either side of the front windshield (130). The vehicle body (102) includes at least one side window (134) on either side of the vehicle body (102), wherein an operator or passenger of the vehicle may open or close the side window (134). In an implementation, a side window (134) connects and matches up with an integrated door window (114) when the door (110) is closed. The vehicle body (102) includes a cabin window (136) located in a rear portion of the vehicle body (102) with respect to the front windshield (130). The vehicle body (102) includes a sunroof (138) or moon roof integrated into the roof of the vehicle body (102). The vehicle body (102) further includes at least one step (140) mounted to the exterior of the vehicle body (102). The step (140) is located such that a user may ascend or descend the at least one step (140) when entering or exiting the vehicle through the door (110).⁵

B. Tesla filed an *inter partes* review petition challenging the ‘084 Patent on 24 September 2019.

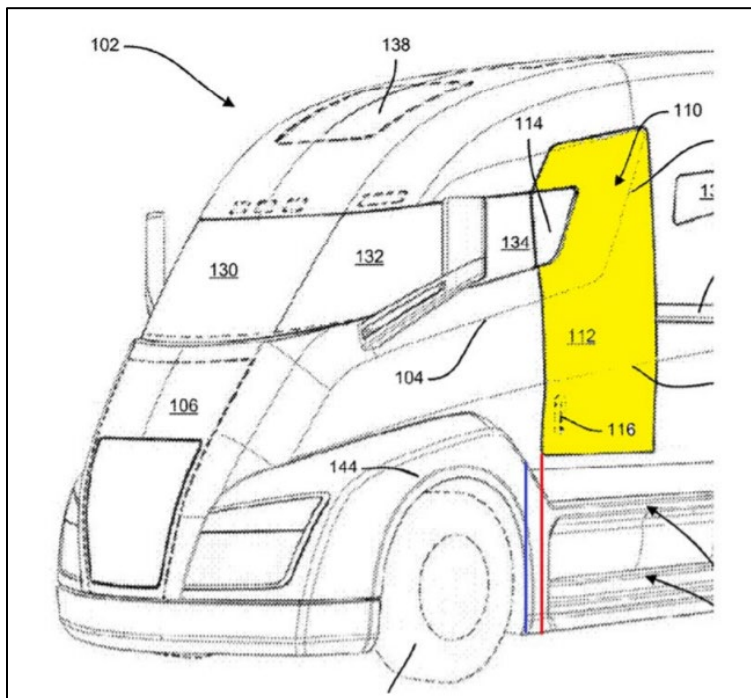
On 24 September 2019, Tesla filed an *inter partes* review petition to challenge the ‘084 patent, arguing that the all the claims of the ‘084 patent were invalid.⁶ To support its petition, Tesla submitted the Declaration of Brian C. Baker, who it claims is a person of ordinary skill in the art.⁷ In the declaration, Baker identified the relative positions of each truck component taught in the

⁵ *Id* at 3:44-4:5.

⁶ Attached as Exhibit B.

⁷ Attached as Exhibit C.

‘084 patent. For example, Baker identified the portions the front side of the door and the rearmost portion of the front wheel well.⁸



Ultimately, the Patent Trial and Appeal Board denied institution on 27 March 2020.⁹

II. CLAIM CONSTRUCTION FRAMEWORK.

Courts construe patent claims as a matter of law.¹⁰ Courts first “look to the intrinsic evidence of the record, i.e., the patent itself, including the claims, the specification, and if in evidence, the prosecution history.”¹¹ Claim construction begins with the words of the claims.¹² In

⁸ *Id.* at 50.

⁹ Attached as Exhibit D, Institution Decision, IPR2019-01646 (Paper 7).

¹⁰ *Markman v. Westview Instruments, Inc.*, 517 U.S. 370,372 (1996).

¹¹ *CVI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1152 (Fed. Cir. 1997).

¹² *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

most cases, the ordinary meaning of the terms should be used to construe the disputed terms.¹³ Further, “[o]ther claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term.”¹⁴ Indeed, “because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims.”¹⁵ The context of a term in the claim as a whole is critical.¹⁶ The specification is also “highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.”¹⁷ Though the specification is helpful when the ordinary meaning is not readily apparent, the claims should not be confined to those embodiments disclosed in the specification.¹⁸ Further, “an invention is construed not only in light of the claims, but also with reference to the file wrapper or prosecution history in the Patent Office.”¹⁹

Extrinsic evidence including expert or inventor testimony, dictionaries, and technical treatises should not be relied upon unless the intrinsic evidence alone does not resolve all the ambiguity in a disputed claim term.²⁰ Importantly, a “patent claim should be construed to encompass at least one disclosed embodiment in the written description portion of the patent

¹³ *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005).

¹⁴ *Id.* at 1314.

¹⁵ *Id.*

¹⁶ *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

¹⁷ *Id.*

¹⁸ *Philips*, 415 F.3d at 1323.

¹⁹ *Graham v. John Deere Co.*, 383 U.S. 1, 33 (1966).

²⁰ *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583-84 (Fed. Cir. 1996)

specification,” and an interpretation that prevents the claim from encompassing at least one embodiment disclosed in the specification is “rarely, if ever, correct.”²¹

III. PROPOSED CLAIM TERMS AND NIKOLA’S PROPOSED CONSTRUCTIONS.

1. Claim Term 1: A rearmost portion / A rearmost portion of a front wheel well.

A rearmost portion / A rearmost portion of a front wheel well, means **the portion of the wheel well that is closest to the back of the semi-truck**. For example, in claim 1 of the ‘084 Patent, “a frontmost side of the door [of a semi-truck] is adjacent to a rearmost portion of a front wheel well” and “at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well.” That is, the claim language makes clear that a rearmost portion is that portion that is closest to the back of the truck; therefore, the rearmost portion of a front wheel well is that portion of the wheel well that is closest to the back of the truck. This construction is consistent with the parties agreed upon construction of “a rearmost side of the door.” Defendant understands what is meant by “rearmost” in that context, therefore the same context may be used to construe “a rearmost portion of a front wheel well.” To reemphasize from above, “because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims.”²² Therefore, if the definition of “rearmost” is understood within one context, then it should be just as clearly understood in another context within the same patent. Nikola’s proposed construction is further

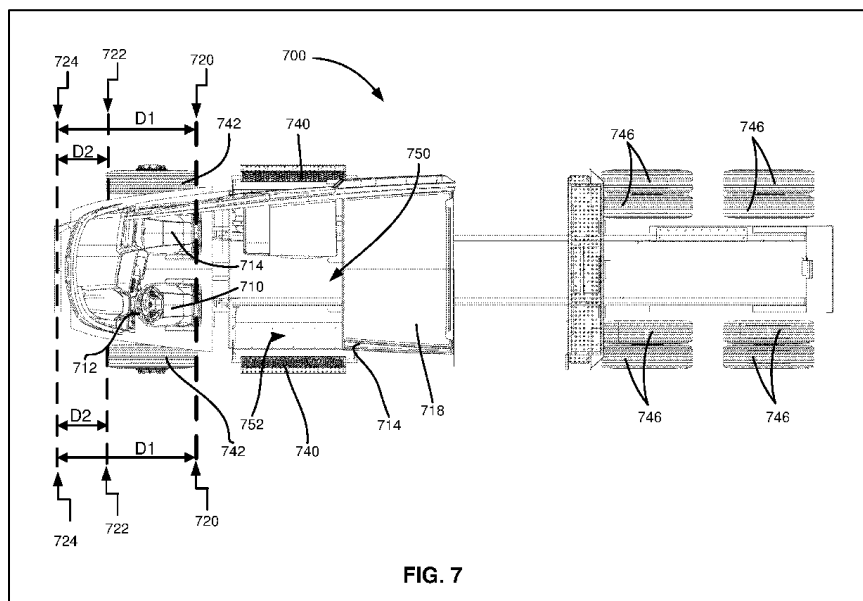
²¹ *John Hopkins Univ. v. CellPro, Inc.*, 152 F.3d 1342, 1355 (Fed. Cir. 1998).

²² *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005).

supported by the patent specification. In describing one embodiment of the invention, the rearmost portion is described. Referring to FIG. 7,

The vehicle 700 includes a front end of the body 724. The front wheels 742 include a first rear most location 720 that is a first distance D1 from the front end of the body 724. The front wheels 742 include a second front most location 722 that is a second distance D2 from the front end of the body 724.²³

These locations, therefore, correspond to the front and rear portions of the wheel wells, as shown in the figure below.



Further, one exemplary embodiment of the invention is described in the patent specification, and further clarifies this idea.

[T]he body of the vehicle includes a plurality of front wheel wells that correspond to the plurality of front wheels. The front wheel

²³ The '084 Patent at 11:8-13.

wells include a front most portion and a rear most portion with a horizontal distance therebetween.²⁴

In other words, a rearmost portion, or a rearmost portion of a front wheel well, is the portion of the front wheel well that is the closest to the rear of the semi-truck, as opposed to a second, frontmost, portion of the wheel well that is closest to the front of the semi-truck.

Not only does Nikola’s proposed construction comport with the specification, but it is also supported by the prosecution and post-grant history of the patent.²⁵ In its IPR Institution Decision, the PTAB denied institution of Tesla’s *inter partes* review petition in part because the prior art cited did not teach “at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well” of claim 1.²⁶

Defendant’s contention that this claim term is indefinite fails to consider at least the intrinsic evidence and that Defendant took the *exact* opposite position in the IPR proceedings – even submitting an expert declaration that identified the rearmost portion of a front wheel well.²⁷

In the IPR proceedings, Defendant explained their understanding of “a rearmost portion of a front wheel well” by annotating FIG. 1 of the ‘084 Patent and affirmatively stating their comprehension of the relative locations of the claimed elements as follows:

Indeed, the position of the door relative to the front wheel well in Modec is almost identical to the position of those same components in the ‘084 patent... Accordingly, it is irrelevant that Figure 1 of the ‘084 patent depicts the frontmost side of the door located horizontally behind the rearmost portion of the wheel well, while

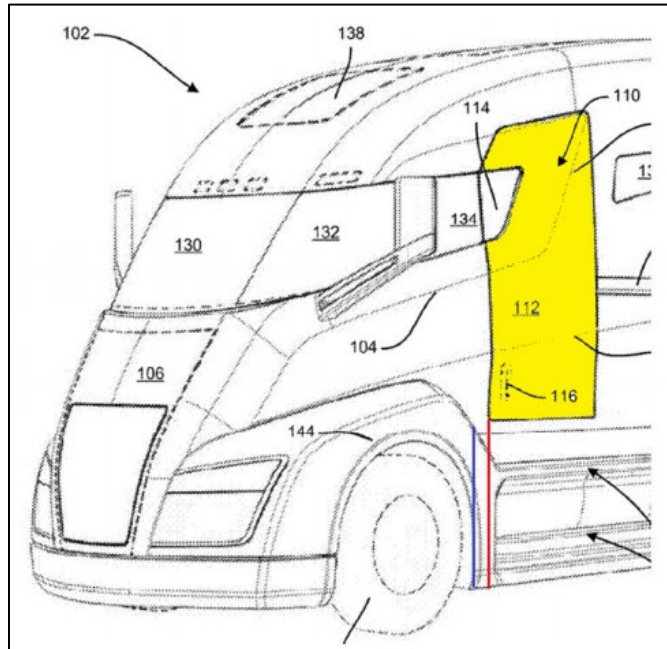
²⁴ *Id* at 13:45-49.

²⁵ *See* Exhibit F, Notice of Allowance, at 2.

²⁶ Ex. D at 17.

²⁷ Ex. C at 22.

Figure 1 of Modec shows the frontmost side of the door located horizontally in front of the rearmost portion of the wheel well.²⁸



To reiterate, Defendant has already explained their understanding of “a rearmost portion of a front wheel well” on the record, and it is the “**blue line extended from rearmost edge** [of the wheel well],”²⁹ which is how Nikola defines it. Simply put, Defendant should not be permitted to present their understanding of the claim language as supported by one expert testimony, only to then present the Court with an entirely different understanding (i.e., indefinite) for the purposes of this claim construction.

The claim term should therefore be construed as: the portion of the wheel well that is closest to the back of the semi-truck.

²⁸ Ex. B at pgs. 36-37, emphasis added.

²⁹ *Id* at pg. 34, emphasis added.

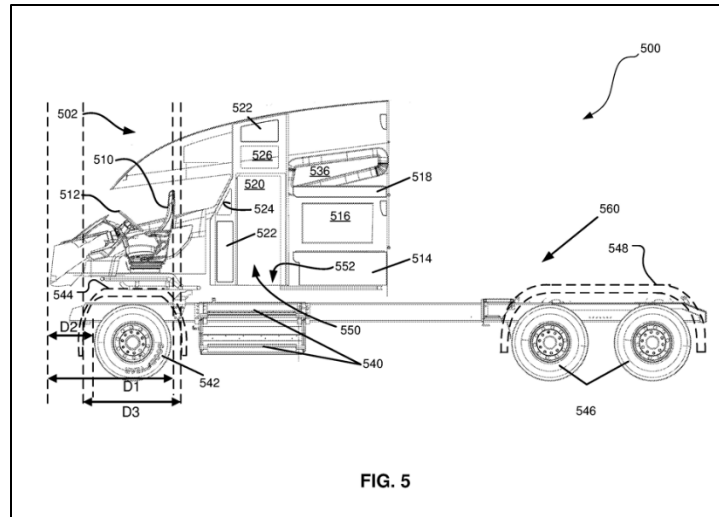
2. Claim Term 2: A line defining the rearmost portion of the front wheel well.

Like Claim Term 1, “a line defining the rearmost portion of the front wheel well,” properly construed, means **a vertical line extending from the portion of the front wheel well that is furthest from the front of the truck.** For example, in claim 1 of the ‘084 Patent, “at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well.” That is, the claim language makes clear that a line defining the rearmost portion of a wheel well is a line drawn tangential to the portion of the wheel well that is furthest from the front of the truck (or closest to the back of the truck). FIG. 5 and FIG. 7 of the ‘084 Patent clearly show the placement of these lines from different perspectives.

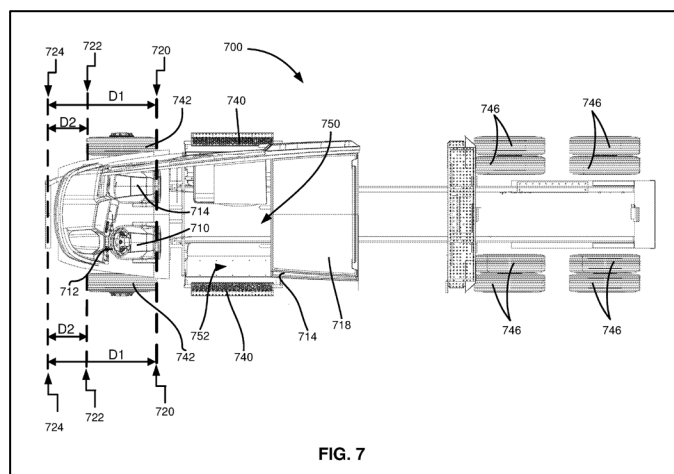
In FIG. 5, the front wheel well is denoted by element number 544. Further, the line defining the rearmost portion of the front wheel well is clearly marked in FIG. 5, and described in the specification in at least the following way:

D1 illustrates a distance from a front end of the vehicle body 502 to a rear most location on the front wheels 542. D2 illustrates a distance from a front end of the vehicle body 502 to a front most location on the front wheels 542. The first distance D1 is greater than the second distance D2. D3 illustrates a distance or horizontal distance between a front most portion of the front wheel well 544. In an implementation, the entirety of the at least one seat is located within the horizontal distance D3 of the front wheel wells 544.³⁰

³⁰ Ex. A, the ‘084 Patent at 9:1-11.



In other words, the rightmost line that D3 points at, to illustrate its distance, denotes the placement of a line defining the rearmost portion of a front wheel well. Similarly, in FIG. 7, the front wheels are denoted by element number 742. The specification of the '084 Patent states, "[t]he front wheels 742 include a first rear most location 720 that is a first distance D1 from the front end of the body 724."³¹ Clearly, the line defining the rearmost portion of a wheel well is the line (720) drawn at the portion of the wheel well that is furthest from the front of the truck (724).



³¹ *Id* at 11:8-10.

More specifically, the line defining the rearmost portion of the front wheel well is a reference point used to describe the positioning of certain elements of the semi-truck vehicle in relation to one another.³²

The claim term should therefore be construed as: a vertical line extending from the portion of the front wheel well that is furthest from the front of the truck.

3. Claim Term 3: At least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well.

“At least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well” means **at least a portion of the driver’s seat in the driver’s cab is forward of the portion of the wheel well that is closest to the back of the truck.** The seat is positioned relative to a line defining the rearmost portion of the front wheel well. For example, in claim 1 of the ‘084 Patent, “at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well.” That is, the claim language makes clear that at least a portion of the seat is forward of a line defining the rearmost portion of a wheel well, which line is a line drawn at the portion of the wheel well that is closest to the back of the truck. FIG. 5 and FIG. 7 clearly show the placement of the seat from different perspectives.

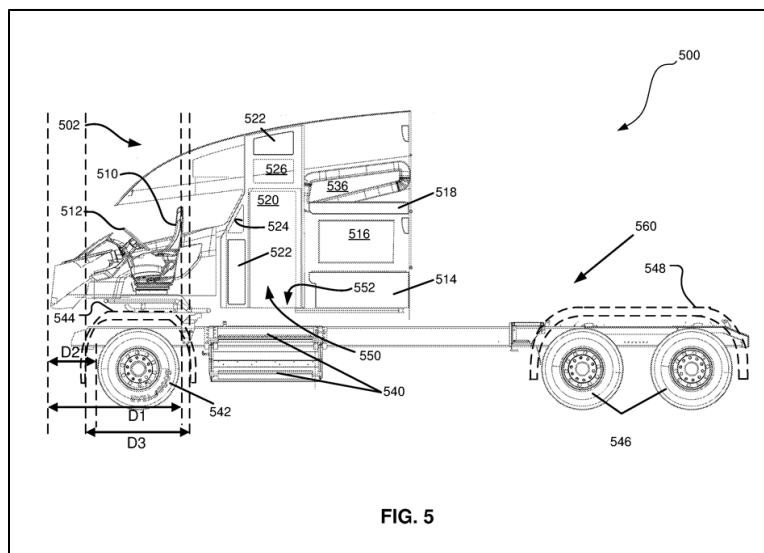
In FIG. 5, the seat is denoted by element number 510. The front wheel well is denoted by element number 544. Further, the line defining the rearmost portion of the front wheel well is clearly marked in FIG. 5, and described in the specification in at least the following way:

D1 illustrates a distance from a front end of the vehicle body 502 to a rear most location on the front wheels 542. D2 illustrates a distance from a front end of the vehicle body 502 to a front most location on the front wheels 542. The first distance D1 is greater than the second

³² Exhibit G, 21 June 2018 Response to Office Action, at 2, 13, 17.

distance D2. D3 illustrates a distance or horizontal distance between a front most portion of the front wheel well 544. In an implementation, the entirety of the at least one seat is located within the horizontal distance D3 of the front wheel wells 544.³³

In other words, the rightmost line that D3 points at, to illustrate its distance, denotes the line defining the rearmost portion of a front wheel well. The line defining the rearmost portion of the front wheel well is a reference point used to describe the positioning of the driver's seat.



And as described above, Figure 7 also described the relative position of the seat with reference to the location, supporting Nikola's proposed construction.³⁴

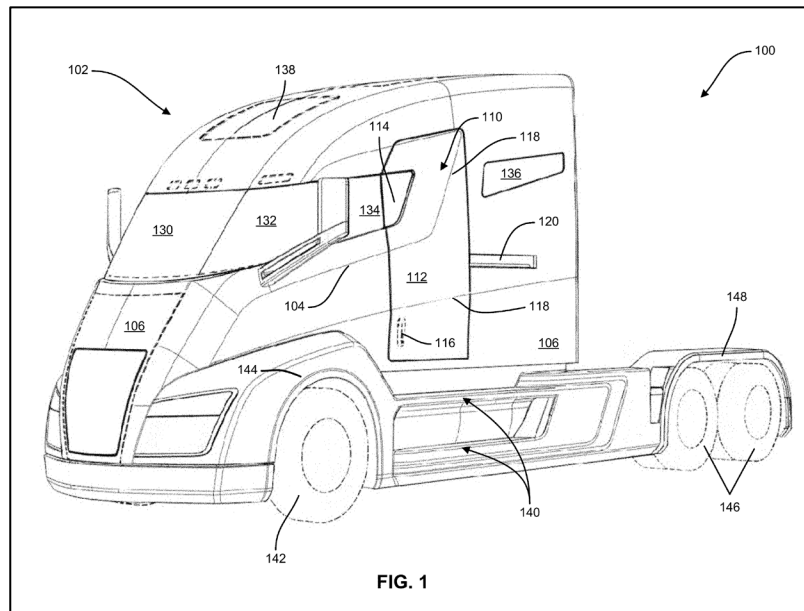
The claim term should therefore be construed as: at least a portion of the driver's seat in the driver's cab is forward of the portion of the wheel well that is closest to the back of the truck.

³³ *Id.*

³⁴ *See also*, Ex. G at 2, 13, 17.

4. Claim Term 4: Adjacent to.

Adjacent, properly construed, means **nearby**. For example, in claim 1 of the '084 Patent, “the door is located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well.” That is, the claim language makes clear that a frontmost side of the door is nearby a rearmost portion of a front wheel well. FIG. 1, and related description in the specification, clearly illustrate and describe the meaning of “adjacent to.”



In FIG. 1, the door is denoted by element number 110 and the front wheel well is denoted by element 144. A front most side of the door, or a side of the door closest to the front of the semi-truck, is therefore shown to be nearby a rearmost portion of the front wheel well, or the portion of the front wheel well that is closest to the back of the semi-truck.

The Parties agree that “a frontmost side of the door” is “a side of the door nearest the front [of the semi-truck],” and that a “wheel well” is “a recess within which a wheel is located.” And, as has been discussed previously, Defendant surely understands the meaning of “a rearmost

portion of a front wheel well.” Therefore, as can be seen in at least FIG. 1 above, the relative positioning of the front side of the door is that it is nearby the rearmost portion of the front wheel well.

In Defendant’s IPR Petition, they demonstrated their understanding of the claim term “adjacent to” by stating, “[t]he correct construction of ‘adjacent to’ under the applicable *Phillips* claim construction standard is ‘nearby but not touching’.”³⁵

Surely Defendant is not suggesting that the claim term be so narrowed as to provide exact coordinates for the location of the door in relation to the wheel well. “[B]readth of a claim is not to be equated with indefiniteness.”³⁶ The claim term should therefore be construed as: nearby.

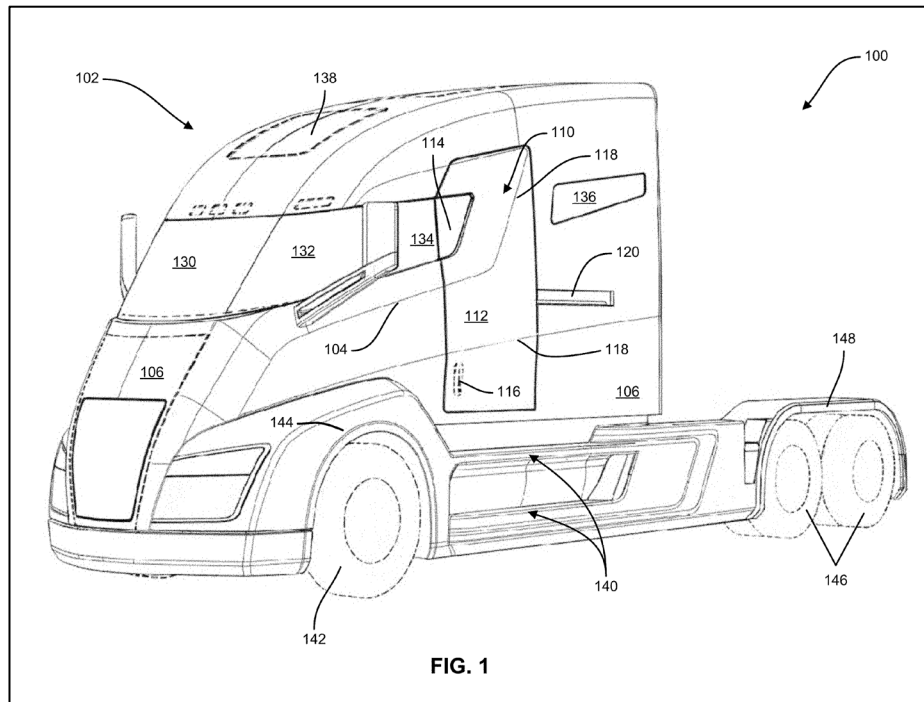
5. Claim Term 5: A frontmost side of the door is adjacent to a rearmost portion of a front wheel well.

“A frontmost side of the door is adjacent to a rearmost portion of a front wheel well” means **the side or portion of the door that is closest to the front of the truck is nearby the portion of the wheel well that is closest to the back of the truck.** For example, in claim 1 of the ‘084 Patent, “the door is located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well.” That is, the claim language makes clear that a frontmost side of the door is nearby a rearmost portion of a front wheel well. According to the above agreed upon claim constructions, a frontmost side of the door is “a side of the door nearest the front [of the semi-

³⁵ *Id* at pg. 9. *See also* Exhibit E, Patent Owner’s Preliminary Response, at 11-13; Ex. G at 17.

³⁶ *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971); *In re Gardner*, 427 F.2d 786, 788, 166 USPQ 138, 140 (CCPA 1970) (“Breadth is not indefiniteness.”).

truck].” Similar to the above, FIG. 1 and related description in the specification, clearly illustrate and describe the meaning of this claim term.



In FIG. 1, the door is denoted by element number 110 and the front wheel well is denoted by element 144. A front most side of the door, or a side of the door closest to the front of the semi-truck, is therefore shown to be nearby a rearmost portion of the front wheel well, or the portion of the front wheel well that is closest to the back of the semi-truck.³⁷

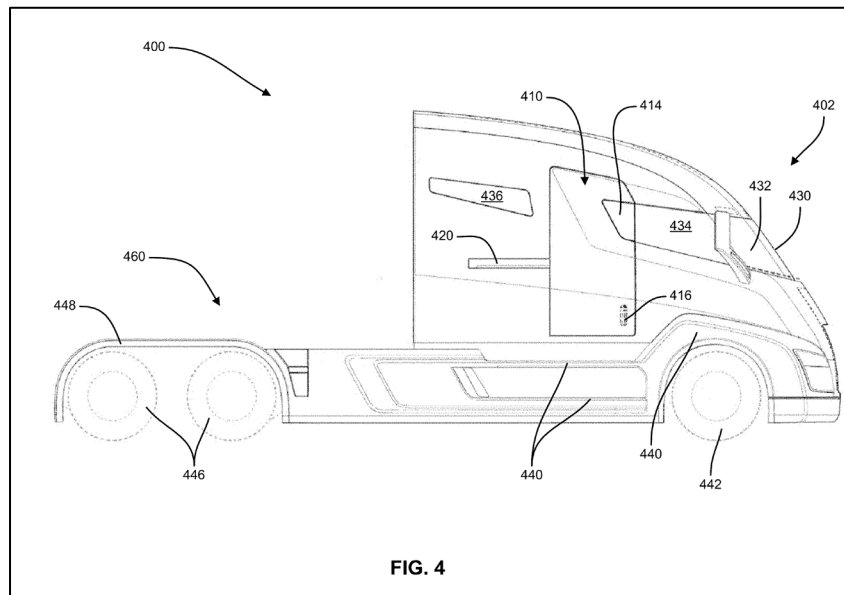
The Parties have agreed that “a frontmost side of the door” is “a side of the door nearest the front [of the semi-truck],” and that a “wheel well” is “a recess within which a wheel is located.” And, as has been discussed previously, Defendant surely understood the meaning of “a

³⁷ See also Ex. D at 16, 18, 29; Ex. E at 11-13; Ex. G at 17.

rearmost portion of a front wheel well.” Thus, the Court should adopt Nikola’s proposed construction.

6. Claim Term 6: The door is located approximately at a midpoint of the body.

“The door is located approximately at a midpoint of the body,” when properly construed, means **the door allowing access into the driver’s cab is located at an approximate center along a horizontal length of the truck cab.** For example, in claim 14 of the ‘084 Patent, “the door is located approximately at a midpoint of the body of the semi-truck vehicle to provide ingress and egress into the cabin.”³⁸ That is, the claim language makes clear that the door is located at an approximate center along a horizontal length of the vehicle body. FIG. 4, and related description in the specification, clearly illustrate and describe the meaning of this claim term.



³⁸ Ex. A, the ‘084 Patent, cl. 14.

In FIG. 4, the door is denoted by element number 410 and the vehicle body is denoted by element number 402. As is clear from the figure, the semi-trailer (460) is considered a separate element from the vehicle body (402), though both the semi-trailer and the vehicle body make up the vehicle (400). As is also clear from the figure, the door (410) is located at an approximate center along a horizontal length of the vehicle body.³⁹

First, the Parties have agreed that “midpoint” is “a point equidistant along a horizontal length [of the semi-truck body].” Even with this agreed upon construction of “midpoint,” The word “approximately” therefore defines itself as something less than a precise location, but within the bounds of the “midpoint” of the semi-truck body. Nikola is not required to give exact coordinates for the location of the door to define the scope of claim 14. Midpoint is clearly defined, and indeed has been agreed to, as being a center point along the horizontal length of the truck body, thereby making it clear that the door is positioned approximately at that point. Should Defendant’s argument be that exact coordinates are needed to make the claim language definite, Nikola respectfully reiterates that injecting an exaggerated level of precision into the claims, and therefore unnecessary limitations, should not be permitted.

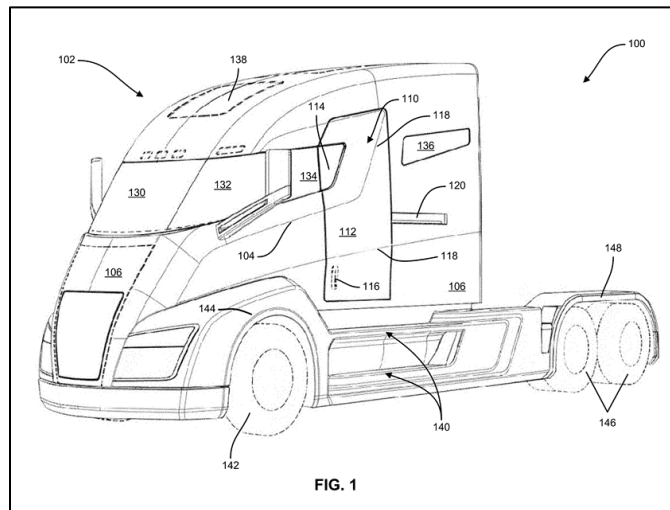
The claim term should therefore be construed as: the door allowing access into the driver’s cab is located at an approximate center along a horizontal length of the truck cab.

7. Claim Term 7: Full-size step

“Full-size step,” when properly construed, means **a step sufficient to allow a user access into the driver’s cab.** For example, in claim 23 of the ‘084 Patent, “the semi-truck vehicle further

³⁹ *Id.* at 8:34-49; Ex. D at 29.

comprises at least one full-size step and at least one hand hold to provide at least two points of leverage and for access and entry into the interior of the cabin.”⁴⁰ That is, the claim language makes clear that the full-size step allows safe access into the cabin. FIG. 1, and related description in the specification, clearly illustrate and describe the meaning of this claim term.



In FIG. 1, the step is denoted by element number 140. As the patent disclosure states:

The vehicle body 102 further includes at least one step 140 mounted to the exterior of the vehicle body 102. The step 140 is located such that a user may ascend or descend the at least one step 140 when entering or exiting the vehicle through the door 110.⁴¹

Therefore, the step allows access into the cabin, as a step would. The step is located below the door, which door is located adjacent to the front wheel well and behind the seat. One of the disclosed motivations behind the claimed invention is to make the operation and usage of the semi-truck safer. As the door is positioned approximately at a midpoint of the semi-truck body and

⁴⁰ *Id.*, cl. 23.

⁴¹ *Id.* at 4:1-5.

behind the seat, in relation to the positioning of other elements, this allows the step directly beneath the door to be of sufficient size. If safety is to be achieved, one would want a step sufficient to allow access, or ingress and egress, with little danger of falling. This “point of leverage,” therefore, is enabled to be full-size, made possible by the positions of the other elements in relation to one another. While Defendant easily dismisses the innovation of the claimed invention to make their points, it is clear from the history of the ‘084 Patent, specifically its prosecution and post-grant history, that the United States Patent and Trademark Office, at various levels, has consistently recognized the innovation of the claimed elements, of which the step of claim 23 is one.

The claim term should therefore be construed as: a step sufficient to allow a user access into the driver’s cab.

IV. CONCLUSION.

Nikola’s proposed constructions are supported by the plain reading of the claims, the specifications, and the file wrapper. As such, the Court should adopt Nikola’s construction.

INDEX OF EXHIBITS TO NIKOLA CORP.'S CLAIM CONSTRUCTION BRIEF

Exhibit No.	Description of Exhibit
A.	United States Patent No. 10,077,084
B.	Tesla, Inc.'s Petition for <i>Inter Partes</i> Review of U.S. Pat. No. 10,077,084, IPR2019-01646, Paper 1.
C.	Declaration of Brian Baker, IPR2019-01646, Tesla Ex. 1002
D.	Decision Denying Institution of <i>Inter Partes</i> Review, IPR2019-01646, Paper 7.
E.	Nikola Corp.'s Preliminary Response to Petition for <i>Inter Partes</i> Review of U.S. Pat. No. 10,077,084, IPR2019-01646, Paper 7.
F.	July 25, 2018 Notice of Allowance of Application No. 15/396,209
G.	June 21, 2018 Response to Final Office Action

Exhibit A



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Milton et al.

(10) **Patent No.:** **US 10,077,084 B2**

(45) **Date of Patent:** **Sep. 18, 2018**

(54) **SYSTEMS, METHODS, AND DEVICES FOR AN AUTOMOBILE DOOR OR WINDOW**

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B60J 5/06 (2006.01)

B60N 3/10 (2006.01)

B60N 3/16 (2006.01)

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(2013.01); **B60N 3/008** (2013.01); **B60N 3/10** (2013.01); **B60N 3/16** (2013.01); **B60R 3/00** (2013.01); **E05D 15/0604** (2013.01); **E05F 15/41** (2015.01); **E05F 15/60** (2015.01); **E05F 15/632** (2015.01); **E05F 15/70** (2015.01); **E05F 15/73** (2015.01); **B60K 6/28** (2013.01); **B60L 11/1874** (2013.01); **E05Y 2900/516** (2013.01); **Y10S 903/906** (2013.01); **Y10S 903/907** (2013.01)

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See application file for complete search history.

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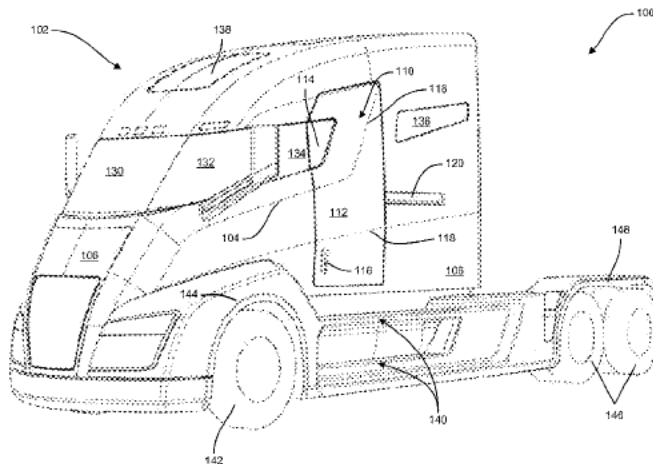
Primary Examiner — Brian L Swenson

(74) *Attorney, Agent, or Firm* — Terrence J. Edwards;
TechLaw Ventures, PLLC

(57) **ABSTRACT**

Systems, methods, and devices for a vehicle door or window are disclosed herein. A vehicle includes a vehicle body and a cabin located within the body of the vehicle, wherein the cabin includes an interior that is configured to accommodate at least one person. The vehicle includes at least one seat located in the interior of the cabin that is configured for seating a user. The vehicle includes at least one door that provides ingress and egress to the interior of the cabin of the vehicle, and the at least one door is located with respect to the body such that the door opens to provide ingress and egress into the cabin from a backside of the seat.

26 Claims, 9 Drawing Sheets



US 10,077,084 B2

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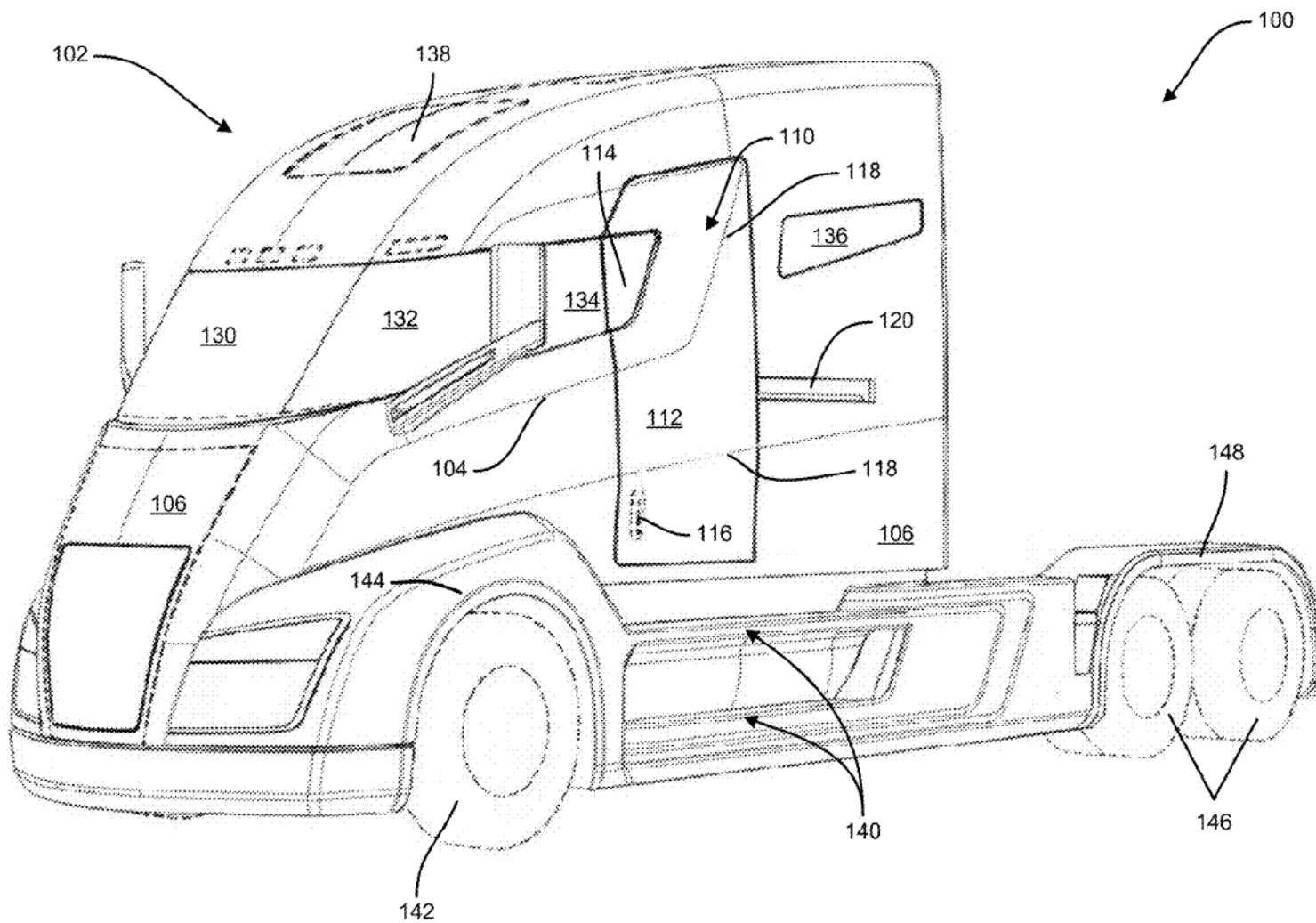


FIG. 1

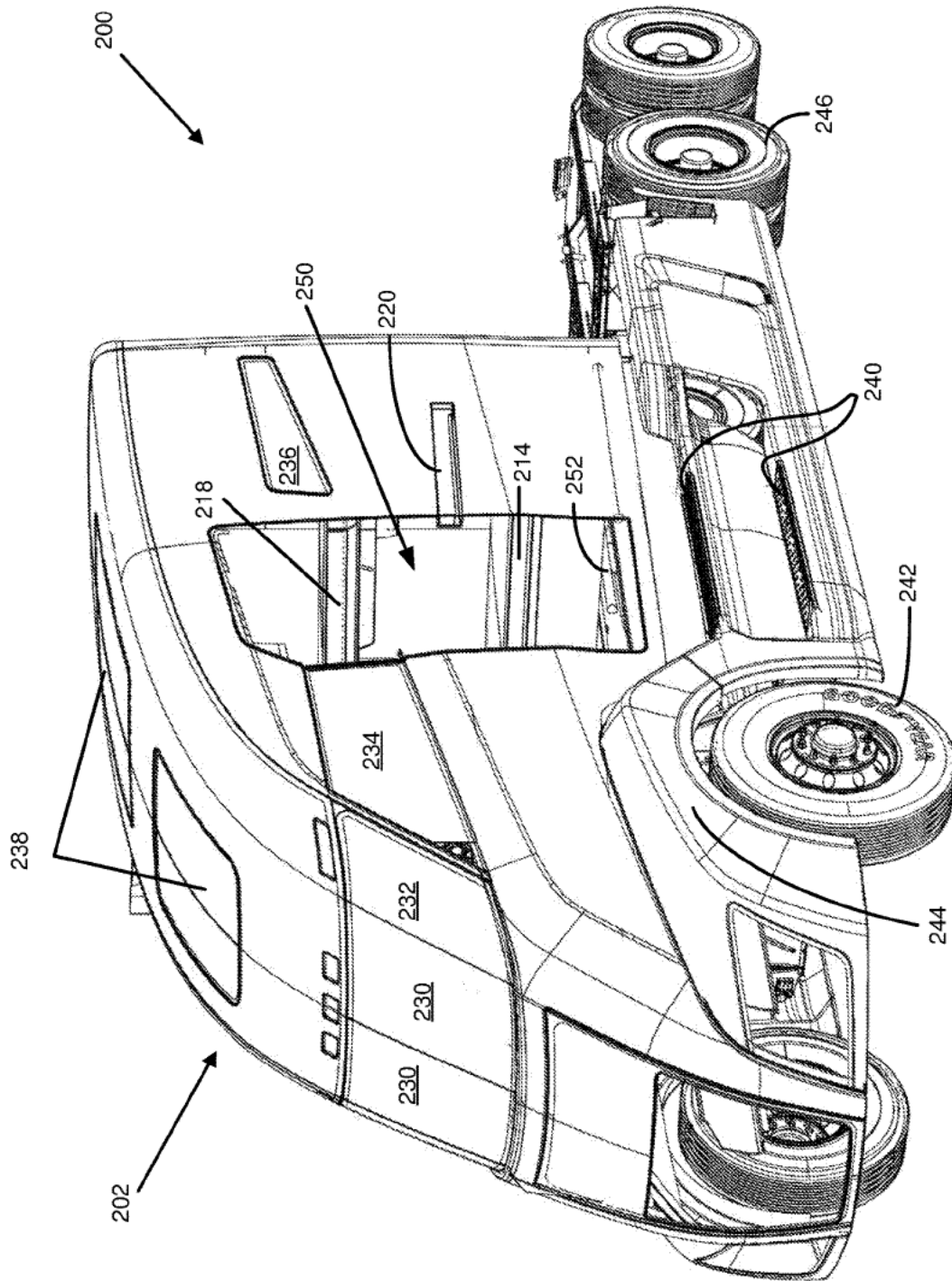


FIG. 2

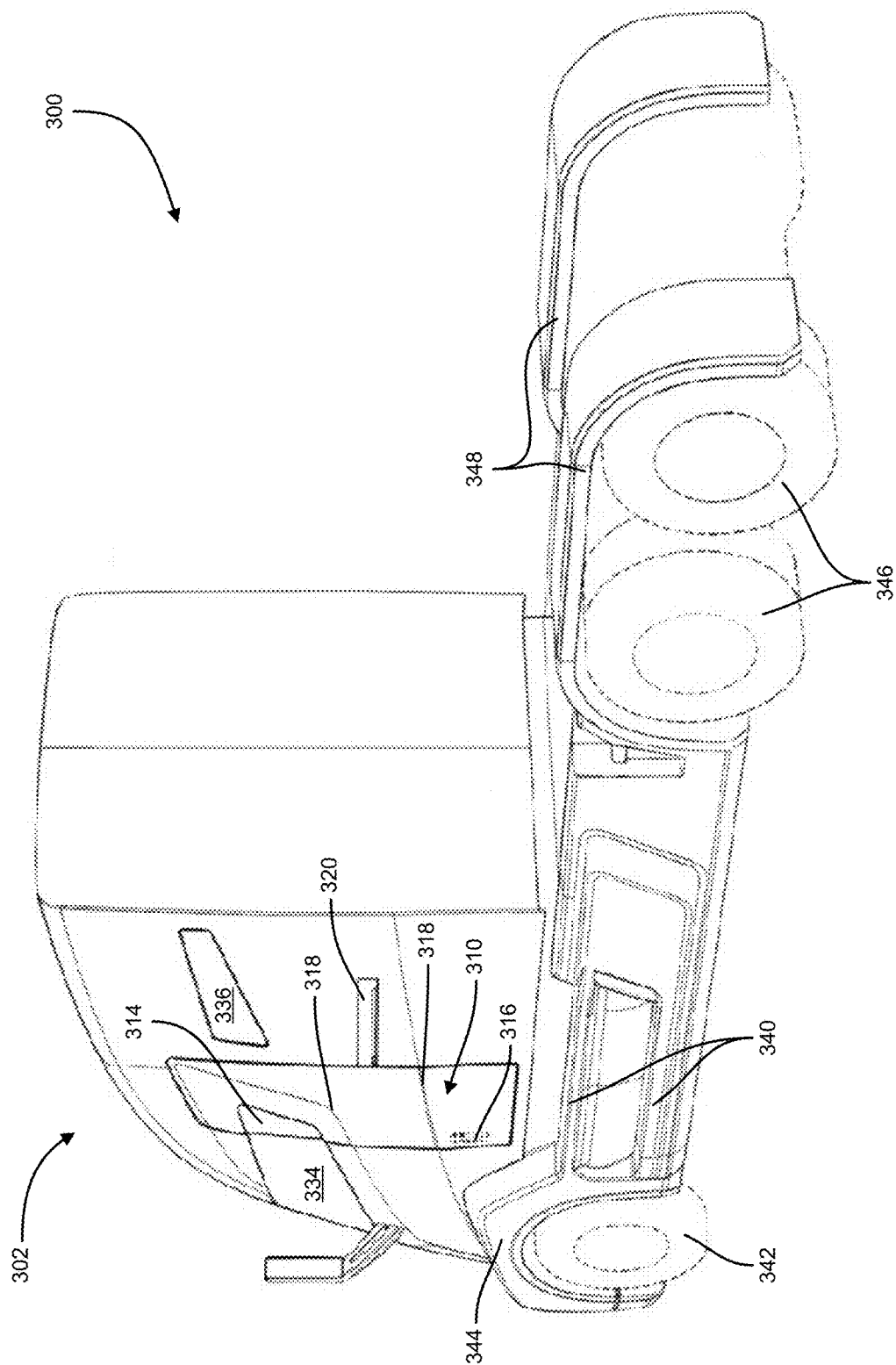


FIG. 3

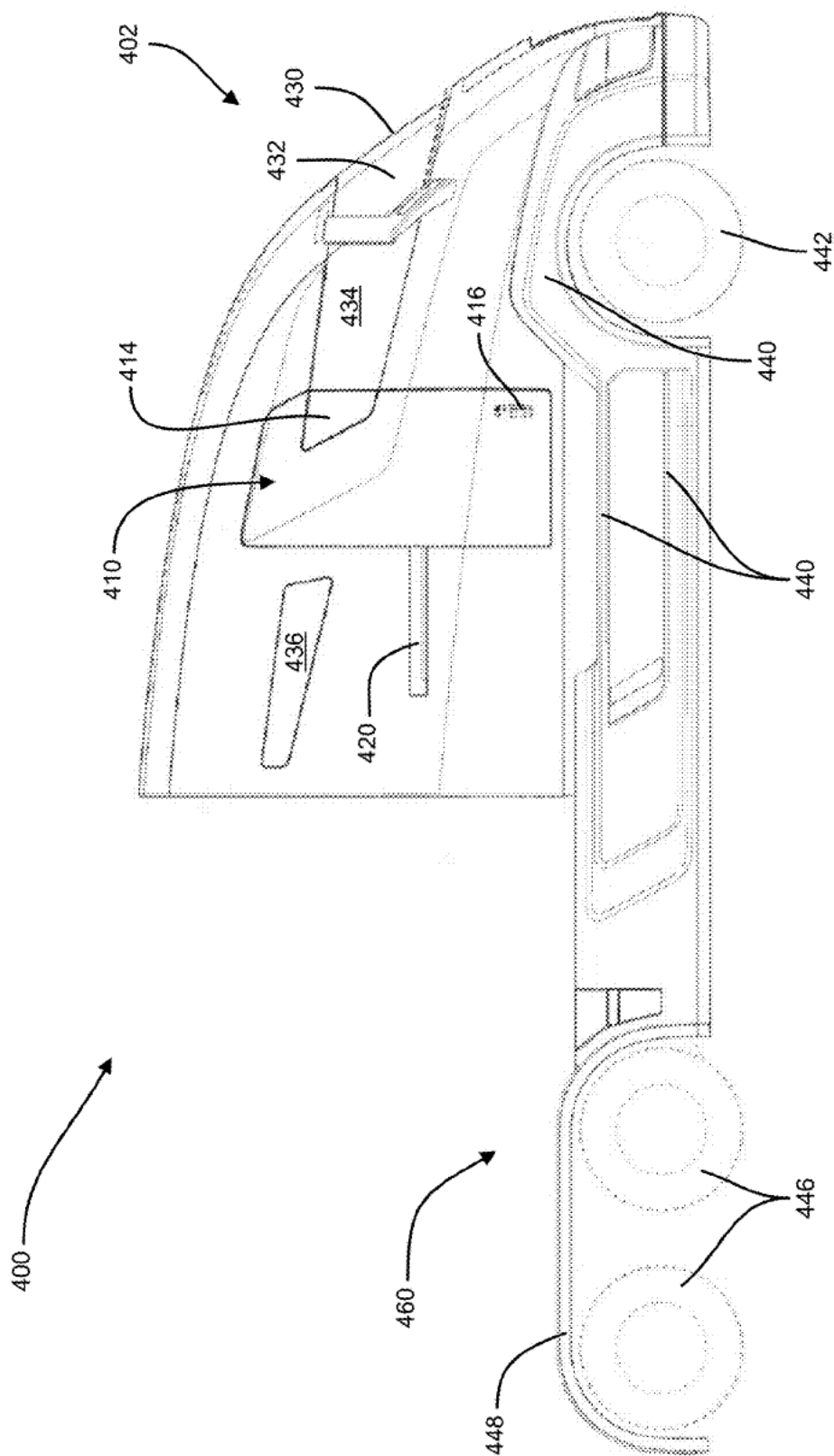


FIG. 4

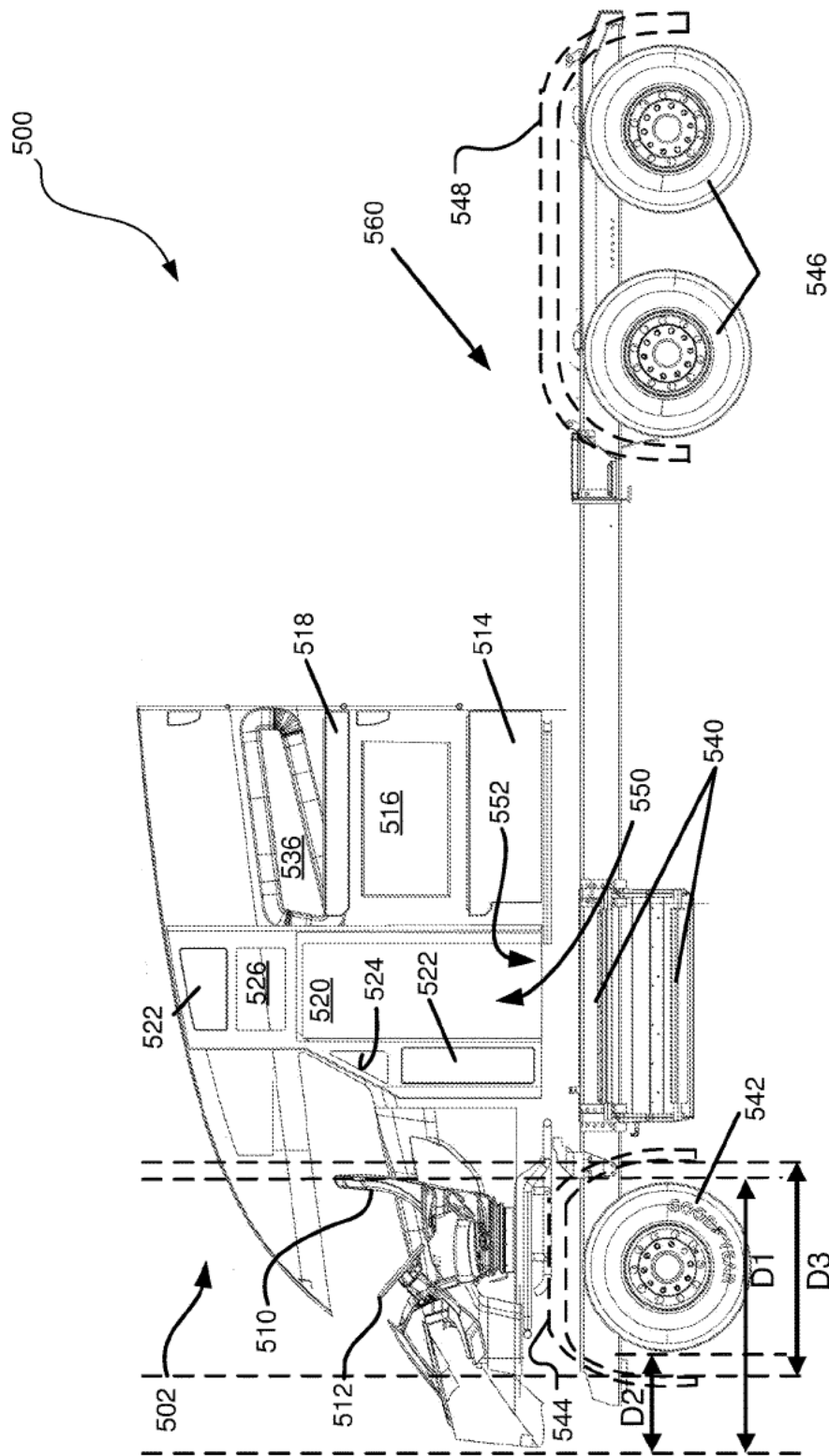
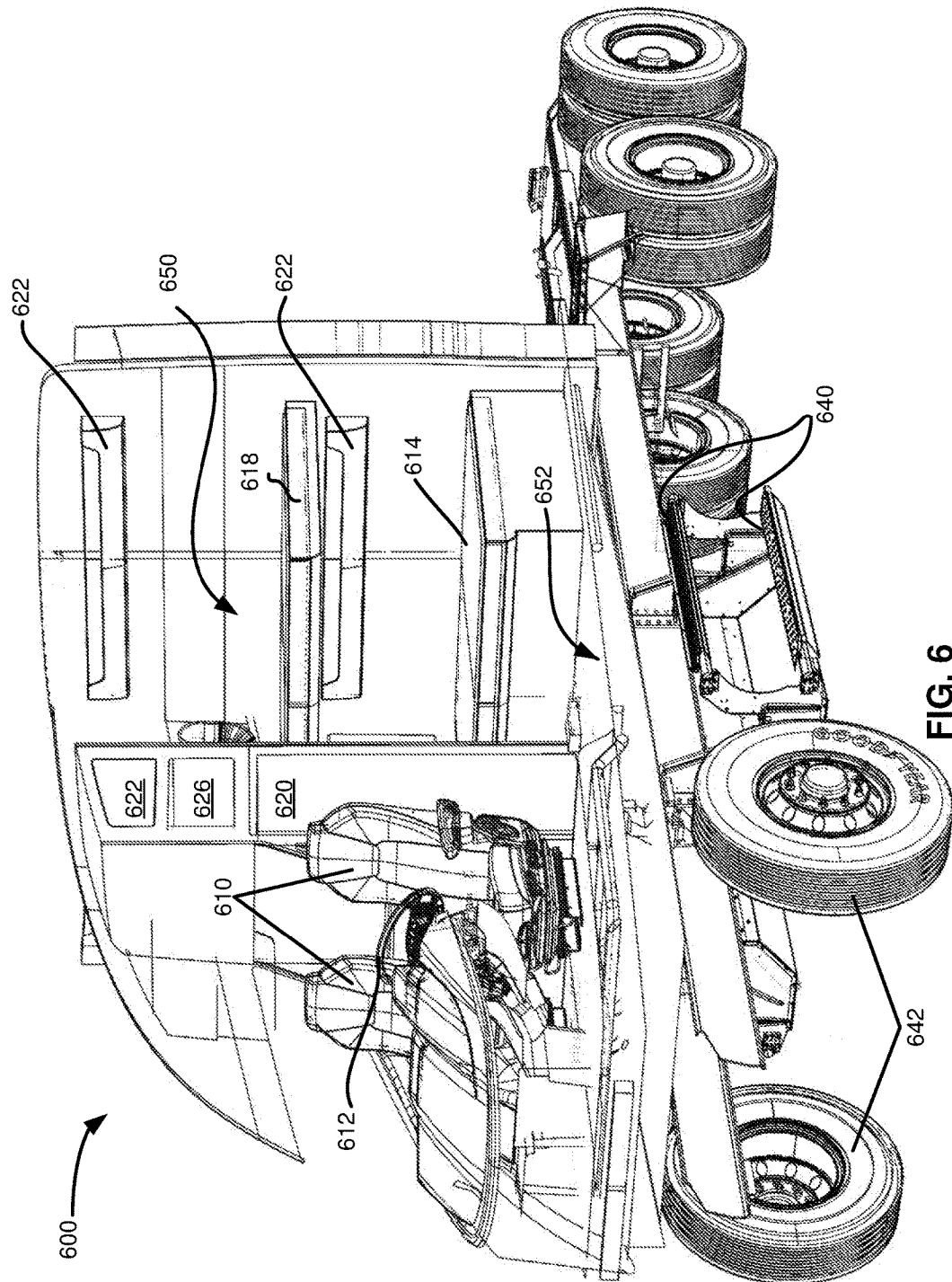


FIG. 5



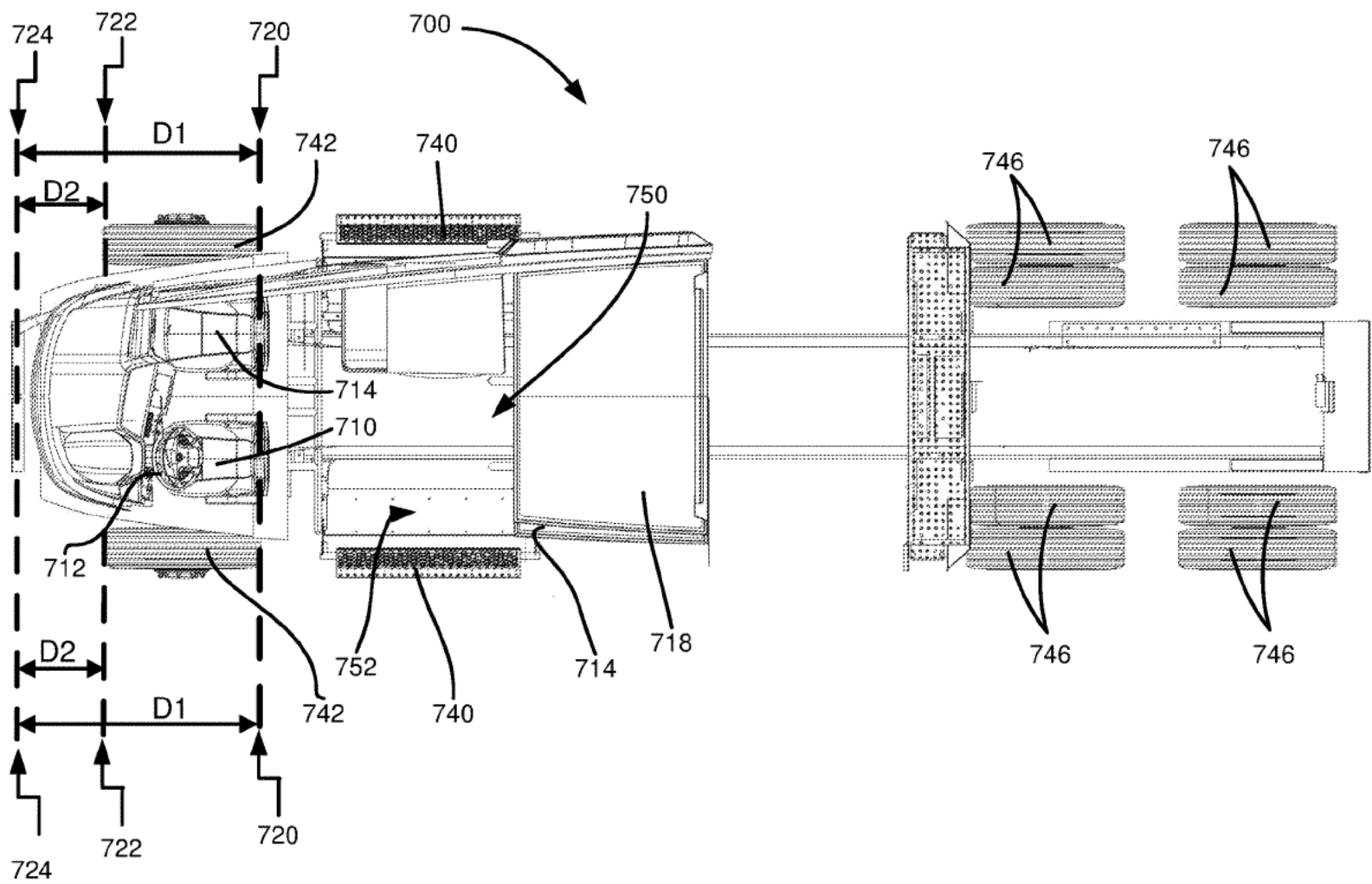


FIG. 7

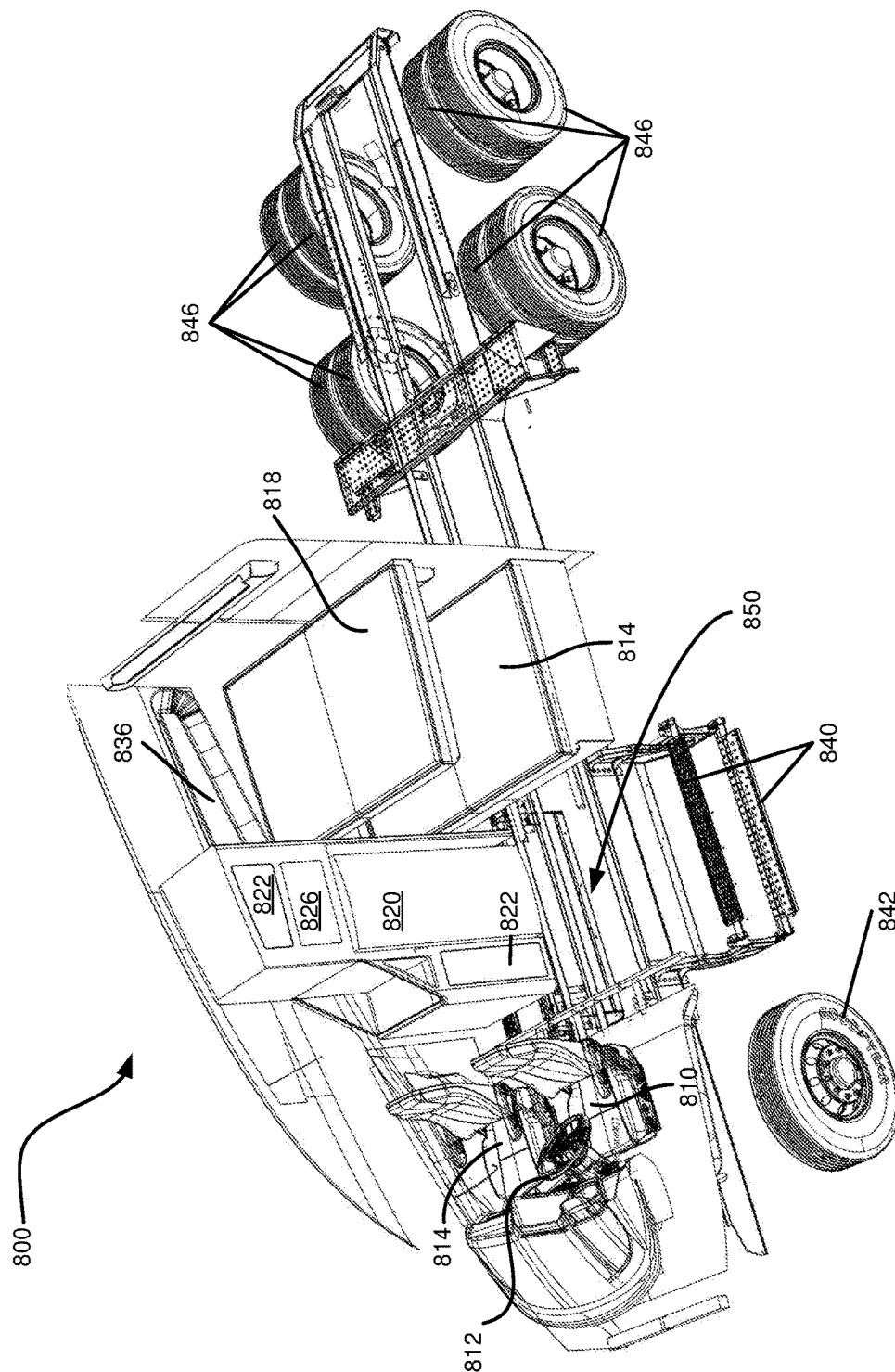


FIG. 8

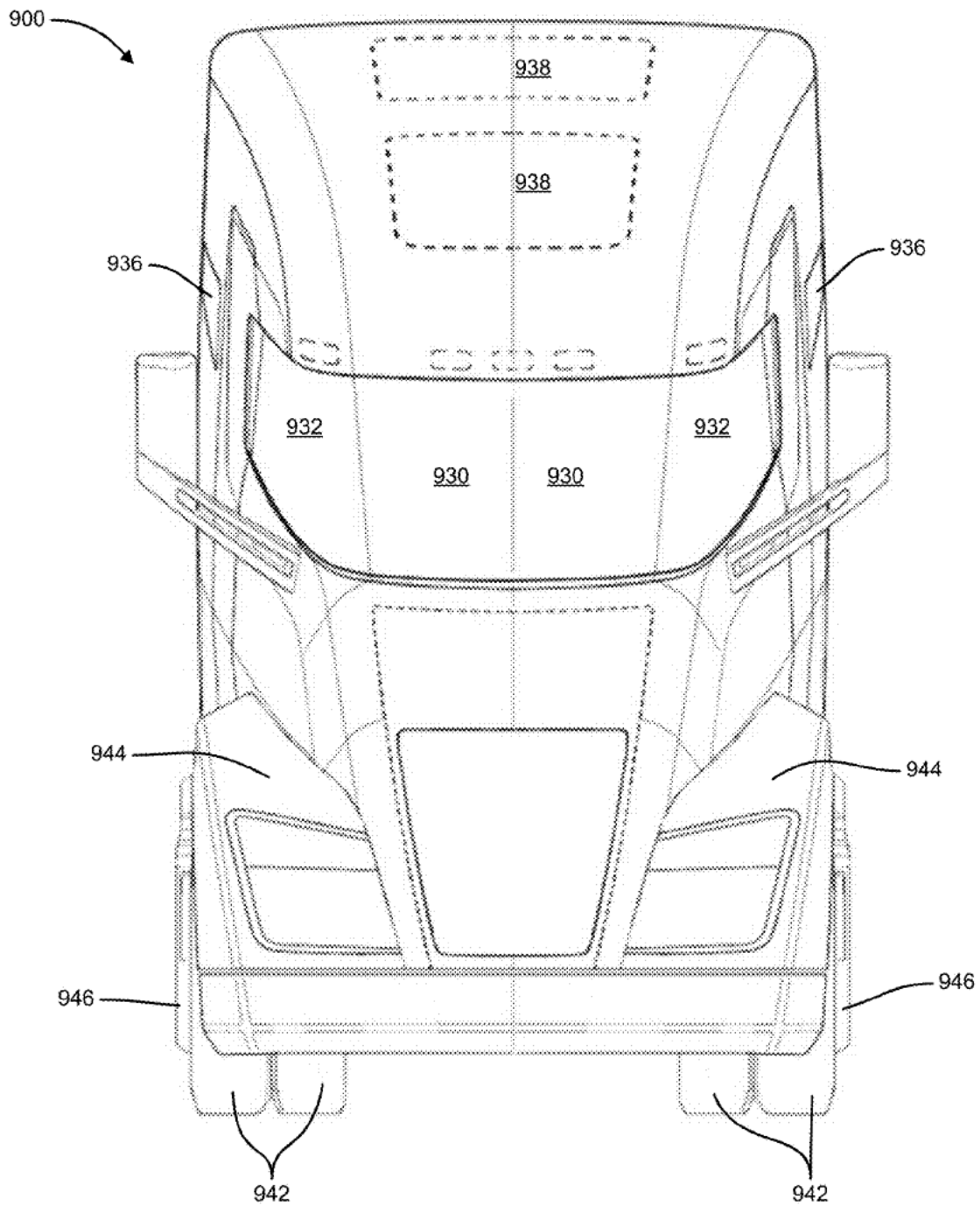


FIG. 9

US 10,077,084 B2

1

**SYSTEMS, METHODS, AND DEVICES FOR
AN AUTOMOBILE DOOR OR WINDOW****CROSS-REFERENCE TO RELATED
APPLICATIONS**

This application is a continuation-in-part of co-pending U.S. patent application Ser. No. 15/357,350 filed Nov. 21, 2016, entitled "MOTOR GEARBOX ASSEMBLY." This application also claims the benefit of U.S. provisional application Ser. No. 62/391,745 filed May 9, 2016, entitled "MOTOR GEARBOX ASSEMBLY," and also claims the benefits of U.S. provisional application Ser. No. 62/273,256 filed Dec. 30, 2015, entitled "SYSTEMS, METHODS, AND DEVICES FOR AN AUTOMOBILE DOOR OR WINDOW." The disclosure of the foregoing applications are incorporated herein by reference in their entireties, including but not limited to those portions that specifically appear hereinafter, the incorporation by reference being made with the following exception: In the event that any portion of the above-referenced applications are inconsistent with this application, this application supersedes said above-referenced applications.

TECHNICAL FIELD

The disclosure relates generally to systems, methods, and devices for an automobile door or window, and more particularly relates to methods, systems, and devices for a door on a semi-truck vehicle.

BACKGROUND

A variety of vehicle doors have been developed, described, and are widely known for providing ingress and egress into a vehicle. Vehicle doors, and particularly semi-truck doors, often provide immediate access to a seat located in the body of the vehicle. The doors are often hinged and require a user to enter or exit the vehicle at an angle that may be uncomfortable or even dangerous. Semi-truck doors and seats are located a significant distance above the ground and a user must be cautious to avoid injury when ascending the steps to the semi-truck door, opening the hinged semi-truck door, and sliding on to the seat while closing the hinged door.

BRIEF DESCRIPTION OF THE DRAWINGS

Non-limiting and non-exhaustive implementations of the present disclosure are described with reference to the following figures, wherein like reference numerals refer to like parts throughout the various views unless otherwise specified. Advantages of the present disclosure will become better understood with regard to the following description and accompanying drawings where:

FIG. 1 is a front perspective view of an embodiment of a vehicle made in accordance with the teachings and principles of the disclosure;

FIG. 2 is a front perspective view of an embodiment of a vehicle with the door removed made in accordance with the teachings and principles of the disclosure;

FIG. 3 is a rear perspective view of an embodiment of a vehicle made in accordance with the teachings and principles of the disclosure;

FIG. 4 is a side view of an embodiment of a vehicle made in accordance with the teachings and principles of the disclosure;

2

FIG. 5 is a side view of an embodiment of a vehicle showing interior components of the vehicle made in accordance with the teachings and principles of the disclosure;

FIG. 6 is a front perspective view of a vehicle showing interior components of the vehicle made in accordance with the teachings and principles of the disclosure;

FIG. 7 is an aerial view of a vehicle showing interior components of the vehicle made in accordance with the teachings and principles of the disclosure;

FIG. 8 is a front aerial perspective view of a vehicle showing interior components of the vehicle made in accordance with the teachings and principles of the disclosure; and

FIG. 9 is a front view of an embodiment of a vehicle made in accordance with the teachings and principles of the disclosure.

DETAILED DESCRIPTION

Applicants have recognized that it is advantageous to provide a vehicle door, and particularly a semi-truck door, that allows a user to safely and comfortably enter and exit the vehicle. According to one aspect of the disclosure, a vehicle includes a vehicle body and a cabin located within the body of the vehicle. The cabin includes an interior that is configured to accommodate at least one person and the cabin includes at least one seat that is configured to seat at least one person. The vehicle includes at least one door that provides ingress and egress to the interior of the cabin of the vehicle, and the door opens into the cabin from a backside of the seat.

According to another aspect of the disclosure, an electric powered semi-truck includes a vehicle body, a cabin located within the vehicle body, at least one seat located in the interior of the cabin, and a sleeper portion located in the interior of the cabin. The semi-truck includes at least one sliding door that opens to provide ingress and egress into the interior of the cabin. A user may access the exterior of the sliding door by ascending at least one exterior step mounted to the exterior of the vehicle body at the door. The sliding door is located at approximately a midpoint of the vehicle body and the sliding door provides ingress and egress into the interior of the cabin from a backside of the at least one seat. The interior of the cabin includes a landing immediately adjacent to the sliding door wherein a user may stand at the landing and access the at least one seat or access the sleeper portion.

According to another aspect of the disclosure, a vehicle includes a vehicle body and a cabin located within the body of the vehicle. The cabin includes an interior that is configured to accommodate at least one person and the cabin includes at least one seat that is configured to seat at least one person. The vehicle includes a plurality of front wheels, and a majority of the seat is located at a position above the plurality of front wheels with respect to the body of the vehicle.

The disclosure relates generally to systems, methods, and devices for an automobile door or window. In the following description of the disclosure, reference is made to the accompanying drawings, which form a part hereof, and in which is shown by way of illustration specific implementations in which the disclosure may be practiced. It is understood that other implementations may be utilized and structural changes may be made without departing from the scope of the disclosure.

Despite the existing systems, methods, and devices relating to automobile doors or windows, systems, methods, and

US 10,077,084 B2

3

devices for an automobile door or window are still being developed and are needed. As will be seen, the disclosure provides such methods, systems, and devices for doors and windows of an automobile, particularly for semi-trucks, in an effective and elegant manner.

For purposes of promoting an understanding of the principles in accordance with the disclosure, reference will now be made to the embodiments illustrated in the drawings and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the disclosure is thereby intended. Any alterations and further modifications of the inventive features illustrated herein, and any additional applications of the principles of the disclosure as illustrated herein, which would normally occur to one skilled in the relevant art and having possession of the disclosure, are to be considered within the scope of the disclosure.

It is to be understood that this disclosure is not limited to the particular configurations, process steps, and materials disclosed herein as such configurations, process steps, and materials may vary somewhat. It is also to be understood that the terminology employed herein is used for the purpose of describing particular embodiments only and is not intended to be limiting.

In describing the disclosure, the following terminology will be used in accordance with the definitions set out below.

It must be noted that, as used in this specification and the appended claims, the singular forms “a,” “an,” and “the” include plural referents unless the context clearly dictates otherwise.

As used herein, the terms “comprising,” “including,” “containing,” characterized by,” and grammatical equivalents thereof are inclusive or open-ended terms that do not exclude additional, unrecited elements or method steps.

Referring now to the figures, FIG. 1 is a front perspective view of an embodiment of a vehicle 100 made in accordance with the teachings and principles of the disclosure. FIG. 1 shows an example vehicle 100, which is an electric driven class 8 semi-truck called the NIKOLA ONE™. In one embodiment, the vehicle 100 is configured to pull a total gross weight of 80,000 lbs. approximately 800 miles to 1,200 miles between stops, or more than 1,200 miles between stops.

In an implementation, the vehicle 100 is an electric driven semi-truck 100 having a vehicle body 102, a plurality of front wheels 142, a plurality of front wheel wells 144, a plurality of rear wheels 146, a plurality of rear wheel wells 148, and an electric motor and associated gear train at every wheel 142. The vehicle 100 includes an aerodynamic door 110 that includes an integrated door window 114 and a door handle 116. The door 110 includes an aerodynamic curvature 118 on the exterior door surface 112 that matches the curvature 104 of the vehicle 100. In an implementation, the door 110 is a sliding door (as pictured in FIG. 1) and the door 110 slides on a track 120 that is integrated into the exterior 106 of the vehicle 100. The vehicle body 102 includes an aerodynamic front windshield 130 and panoramic windows 132 on either side of the front windshield 130. The vehicle body 102 includes at least one side window 134 on either side of the vehicle body 102, wherein an operator or passenger of the vehicle may open or close the side window 134. In an implementation, a side window 134 connects and matches up with an integrated door window 114 when the door 110 is closed. The vehicle body 102 includes a cabin window 136 located in a rear portion of the vehicle body 102 with respect to the front windshield 130. The vehicle body 102 includes a sunroof 138 or moon roof integrated into the

4

roof of the vehicle body 102. The vehicle body 102 further includes at least one step 140 mounted to the exterior of the vehicle body 102. The step 140 is located such that a user may ascend or descend the at least one step 140 when entering or exiting the vehicle through the door 110.

The vehicle 100 shown in FIG. 1 includes an electric motor and associated gear train (e.g., gear train with dual gear reduction) at every wheel 142, 146, which motors and gear trains may be grouped in pairs to form a motor gearbox assembly as described in further detail in U.S. patent application Ser. No. 15/357,350 filed Nov. 21, 2016, which is hereby incorporated by reference in its entirety herein. In the embodiment shown in FIG. 1, the four rear wheels 146 each include a dual wheel pair (two wheels that rotate together). The electric motor may be configured to produce any suitable horsepower (HP), such as 100 to 400 HP, with six motors combined, may output about 2,000 HP and over 3,700 ft. lbs. of torque before gear reduction, and nearly 86,000 ft. lbs. of instant torque after gear reduction. The vehicle's six electric motors may produce superior horsepower, torque, acceleration, pulling and stopping power over other class 8 semi-trucks known in the art. It should be noted that the inclusion of an electric motor, and the elimination of a standard combustion engine, may allow for the reconfiguration of the layout and structure of a standard semi-truck as known in the art. The reconfiguration of many components of the vehicle body 102 can be advantageous to a user, as disclosed and described in the present application. The elimination of the combustion engine has, for example, provided for the at least one seat to be located at a position nearer the front of the vehicle body 102 than in a conventional semi-truck.

In an embodiment, the vehicle is powered by an electric motor. The electric motors may be powered by any suitable energy storage system (ESS) such as a rechargeable battery pack that may be charged in any suitable manner. For example, the ESS may include a liquid cooled lithium-ion battery pack which may be charged by an onboard turbine or fuel cell of a turbine or fuel cell assembly. The turbine or fuel cell may automatically charge the batteries of the ESS when needed and eliminate the need to ever “plug-in” the batteries. The turbine or fuel cell may produce clean energy, which may provide ample battery power to power the vehicle. When going downhill, the vehicle's electric motors may be configured to absorb braking energy that is normally lost and deliver the braking energy back to the batteries, thereby increasing component life, miles per gallon, safety, and freight efficiencies while eliminating noisy engine brakes and reducing the potential for a runaway vehicle.

The aerodynamic door 110 is located to improve access and safety when entering or exiting the vehicle. In an implementation, the door 110 is a sliding door as pictured in FIG. 1, and in a further implementation the door 110 is a hinged door. In an implementation, the door 110 is located directly above a portion of the at least one step 140 such that a user may comfortably ascend or descend the step 140 when entering or exiting the vehicle through the door 110. The front of the vehicle body 102 is denoted by the front windshield 130, the door 110 is located to a backside of the at least one front wheel 142 and wheel well 144. In an implementation, the step 140 is connected to the front wheel well 144 and the door 110 is positioned immediately above the step 140 as pictured in FIG. 1. The door 110 permits ingress and egress into the vehicle body 102 and the door 110 opens to a backside of at least one seat (see 510 in FIG. 5) in the interior cabin (see 550 in FIG. 5). In an implementation, there is no additional door that provides imme-

US 10,077,084 B2

5

mediate access to a seat. In an implementation, the door **110** provides ingress and egress from a backside of a seat and there is no other door on that side of the vehicle body **102**. In an implementation, the vehicle body **102** includes a single door at a driver's side of the vehicle or at a passenger's side of the vehicle. In an implementation, the vehicle body **102** includes two doors, wherein one door is located at a driver's side of the vehicle and an additional door is located at a passenger's side of the vehicle. In at least one implementation, more than one door may be located on each side of the vehicle.

In an implementation, the door **110** extends from a top of the step **140** to the top or roof of the vehicle body **102**. In an implementation, the door **110** provides an opening that is at least seven feet high. In an implementation, the door **110** provides an opening that is at least six feet six inches high. In an implementation, the door **110** provides an opening that is at least six feet high. In an implementation, the door **110** provides an opening that is at least five feet high. In an implementation, the door **110** is configured to permit at least one person to stand in the door frame without bending down when the door **110** is opened.

The front of the vehicle body **102** is denoted by the front windshield **130** and a front side of the door **110** is located adjacent to a backside of the front wheel well **144**. Alternatively, a portion of the door **110** is located above the front wheel well **144**. In an implementation, a front side of the door **110** is located at least six inches behind a backside of the front wheel well **144**. In an implementation, a front side of the door **110** is located at least twelve inches behind a backside of the front wheel well **144**. In an implementation, a front side of the door **110** is located at least eighteen inches behind a backside of the front wheel well. The width of the door **110** is configured to permit at least one person to stand in the doorframe while facing into the vehicle body **102** when the door **110** is opened. In an implementation, the door **110** is at least two feet wide. In an implementation, the door **110** is at least three feet wide. In an implementation, the door **110** is at least four feet wide. In an implementation, the door **110** is configured to permit at least one person to stand in the doorframe while holding a standard sized piece of luggage and facing into the vehicle body **102** when the door **110** is opened.

In an implementation, the vehicle includes a drive motor attached to the door **110** that is configured to open or close the door. In an implementation, the drive motor is engaged when a user engages the door handle **116**. In an implementation, the drive motor is automatically engaged when a sensor detects that a user is approaching the door **110**. In an implementation, the door **110** includes a peak load sensor that is configured to sense a threshold load when the door is closing. In such an implementation, the vehicle **100** includes a control unit that reverses the direction of the door **110** and prohibits the door **110** from closing when the peak load sensor senses the threshold load. Such an implementation may be beneficial to ensure safety when entering or exiting the vehicle such that the door will not close on a user and injure the user when the user is passing through the door **110**.

It should be noted that the size and size of the door **110** can have a significant impact on whether a person can safely and comfortably enter or exit the vehicle body **102**. In an embodiment of the present disclosure, the size and shape of the door **110** is configured to permit a person to comfortably step into the vehicle body **102** as if stepping through a residential door. In an embodiment of the present disclosure, the door **110** is configured to permit a person to safely face into the vehicle body **102** when entering or exiting the

6

vehicle body **102**. The base of the door **110** may be located at a significant distance above the ground and it is beneficial to provide an ingress and egress into the vehicle body **102** that permits a person to comfortably and safely step into the vehicle body **102**.

It should further be noted that the location of the door **110** can have a significant impact on whether a person can safely and comfortably enter or exit the vehicle body **102**. In an embodiment of the present disclosure, the door is located at a backside of a seat such as the driver's seat or the passenger's seat. In an embodiment of the present disclosure, the door opens to a landing (see **552** in FIG. **5**) and a person may comfortably step into the vehicle body **102** while facing forward into the vehicle body **102**. It should be noted that prior art vehicle doors are typically configured to provide immediate access to a vehicle seat and therefore require a user to enter the door at an angle. This can be particularly dangerous in the case of a semi-truck, wherein the door and the seat may be located at a significant distance above the ground and the vehicle body may be very large. Particularly in the case of semi-trucks, a user may have difficulty entering or exiting the semi-truck, and the user is at risk of injury while entering or exiting the semi-truck, when the user must slide into or out of a seat of the vehicle while ascending or descending a step on the exterior of the vehicle. It is therefore beneficial to provide a vehicle door, and particularly a semi-truck door, that permits a user to enter the vehicle without immediately sitting in a seat. In one implementation, a width of the door is completely unobstructed by a seat or seat cushion. In one implementation, a majority of the width of the door, such as at least 50% of the width of the door, is unobstructed by a seat or seat cushion. In one implementation, a width of the door is completely unobstructed by a front edge of a seat. For example, a rear or back of a seat may slightly or partially obstruct the opening but a front or seat portion of the seat may not obstruct the opening. Eliminating or minimizing the amount of door opening that is obscured by a seat may allow a user to more easily enter or exit by walking into the vehicle **100** while keeping their body square or parallel with the opening. A seat or other object may be considered obscuring the opening if it is within three feet, two feet, one foot, or less of the opening of the door **110**. In one embodiment, other objects such as tables cabinets, or other structures may also not obscure the opening.

The door handle **116** is located on the door **110** to improve access and safety when engaging the door handle **116** to unlock and/or open the door **110**. The door handle **116** may include any handle known in the art or later developed, including, for example, a lever type, a push button type, a lift back type, a pull type, or any other type of door handle **116**. In an implementation, the door **110** is a sliding door and the handle **116** is located at a portion of the door **110** nearest the front windshield **130** of the vehicle **100**. In an implementation, the door **110** is a sliding door and the handle **116** engages a drive motor to pull the door **110** open or closed when the handle **116** is engaged by a user. In one embodiment, the handle is located in a bottom half, bottom third, and/or bottom quarter of the door.

The door curvature **118** is designed to increase the aerodynamic nature of the vehicle **100** and to decrease drag when the vehicle **100** is in motion. The door curvature **118** matches an overall curvature **104** of the vehicle **100** such that the door **110** is fully integrated into the exterior of the vehicle **100** when the door **110** is closed.

In the case of a sliding door **110**, the sliding door track **120** connects with the door **110** and provides a path for the door

US 10,077,084 B2

7

110 to slide when opening or closing. In an implementation, the vehicle **100** includes an upper door track, a mid-track, and a lower door track. In an implementation, the vehicle **100** includes a single sliding door track **120**. The sliding door track **120** is configured to permit the door to be smoothly opened without applying a significant amount of pressure.

The at least one exterior step **140** is mounted to or located on the exterior of the vehicle **100**. The step **140** is constructed of any suitably rigid material and is configured to support the weight of at least one person. The at least one step **140** is located at the door **110** such that a user may ascend the step **140** and pass through the door **110** when opened. In an implementation, the step **140** is a standard full size step. In an implementation, the at least one step **140** is fully rigid and cannot be collapsed. In an implementation, the at least one step **140** includes joints and can be collapsed when not in use. In an implementation, the vehicle body **102** includes a handle or similar point of leverage that is configured to provide stability to a user when the user is ascending the at least one step **140** or entering the vehicle through the door **110**. In an implementation, the vehicle body **102** includes two handles configured to provide two points of leverage and assist a user when ascending the at least one step **140** or entering the vehicle through the door **110**. In such an implementation, the user may ascend the at least one step, hold on to one or more of the handles, and pass through the door **110** facing forward into the cabin interior.

The aerodynamic vehicle body **102** is configured and formed to reduce drag when the vehicle **100** is in motion. In an implementation, the vehicle **100** is an electric powered semi-truck and the vehicle does not include a combustion engine at the front side of the vehicle. Therefore, because the vehicle does not include a combustion engine, the vehicle body **102** may have a particularly aerodynamic shape. In an implementation, a seat (see **510** in FIG. **5**) is located above a front wheel well **144**. In an implementation, the front windshield **130** is located near the front-most point of the vehicle **100** and the front windshield **130** and panoramic windows **132** are configured to provide a user with a wide range of visibility. It should be appreciated that locating a seat **510** near the front of the vehicle body **102** and providing a panoramic view of the surroundings will increase safety and visibility when operating the vehicle.

Referring now to FIG. **2**, a front perspective view of a vehicle **200** without a door is shown. The vehicle **200** includes a vehicle body **202** having a front windshield **230**, a panoramic window **232**, at least one side window **234**, a cabin window **236**, and a sunroof or moon roof **238**. The vehicle **200** includes a plurality of front wheels **242** and front wheel wells **244** and a plurality of rear wheels **246**. The vehicle includes at least one exterior step **240** leading to a door (see **110** in FIG. **1**). In an implementation, the door is a sliding door that is operated by sliding the door along a track **220** integrated into the exterior of the vehicle **200**. The vehicle includes a cabin interior **250** and a landing **252** within the cabin interior **250**. The cabin interior **250** includes a sleeper area having a lower sleeping space **214** and an upper sleeping space **218**. FIG. **2** illustrates the vehicle **200** without a door (see **110** in FIG. **1**) such that a portion of the interior cabin **250** may be shown.

In an embodiment, the landing **252** is an open space and it includes a flat horizontal landing **252**. Where the front windshield **230** denotes the front of the vehicle **200**, the landing **252** is located at a backside of a seat (see **510** in FIG. **5**). In an implementation, the landing **252** is located behind

8

a front wheel well **244**. In an implementation, the landing **252** is located in front of a sleeping space **214**, **218**. In an implementation, the landing **252** extends from the door opening to a wall directly opposite the door opening. In an implementation, the vehicle body **202** includes two doors **110** directly opposite from one another, and the landing **252** extends from one door opening to the other door opening.

In an implementation, the size and shape of the landing **252** is configured to accommodate at least one person. In an implementation, the landing **252** has a vertical ceiling height that is configured to accommodate a person without the need for the person to bend over. In an implementation, the landing **252** has a vertical ceiling height of at least eight feet. In an implementation, the landing **252** has a vertical ceiling height of at least seven feet. In an implementation, the landing **252** has a vertical ceiling height of at least six feet six inches. In an implementation, the landing **252** has a vertical ceiling height of at least six feet. In an implementation, the landing **252** has a vertical ceiling height of at least five feet six inches.

Referring now to FIG. **3**, a rear perspective view of a vehicle **300** made in accordance with the teachings and principles of the disclosure is illustrated. The vehicle **300** includes a vehicle body **302** having at least one side window **334** and at least one cabin window **336**. The vehicle **300** includes a plurality of front wheels **342** and front wheel wells **344** and a plurality of rear wheels **346** and rear wheel wells **348**. The vehicle **300** includes at least one step **340** leading to a vehicle door **310**. The door **310** includes a handle **316**, an aerodynamic door curvature **318**, and an integrated door window **314**. In an implementation, the door **310** is a sliding door and it is opened and closed by sliding on a track **320**.

Referring now to FIG. **4**, a side view of a vehicle **400** made in accordance with the teachings and principles of the disclosure is illustrated. In an implementation, the vehicle **400** is a semi-truck with a semi-trailer **460** and a vehicle body **402**. The vehicle **400** includes a plurality of front wheels **442**, front wheel wells **442**, rear wheels **446**, and rear wheel wells **448**. The vehicle body includes a front windshield **430**, a panoramic window **432**, at least one side window **434** and a cabin window **436**. The vehicle body includes a vehicle door **410** having a handle **416** and an integrated door window **414**. In an implementation, the door **410** is a sliding door and the vehicle body includes a sliding door track **420**. The vehicle body includes at least one step **440** located at the base of the door **410** that may permit a user to access the door **410** and comfortably enter or exit the vehicle body **402**.

Referring now to FIG. **5**, a side view of a vehicle **500** showing interior components of the vehicle **500** is shown. As illustrated in FIG. **5**, the vehicle **500** is a semi-truck having a vehicle body **502** and a semi-trailer **560**. The vehicle **500** includes a plurality of front wheels **552** and a plurality of rear wheels **546**. The vehicle **500** includes at least one seat **510** wherein a driver or a passenger of the vehicle may sit. In an implementation, the vehicle body **502** includes only a driver seat **510** and in a further implementation the vehicle body **502** includes a driver seat **510** and a passenger seat. The vehicle body **502** includes a steering wheel **512** positioned in front of a driver seat **510**. The vehicle includes at least one step **540** mounted to the exterior of the vehicle body **502** and wherein a user may ascend or descend the at least one step when entering or exiting the vehicle body **502** through the door (see **110** in FIG. **1**). The vehicle body **502** includes a cabin interior **550** having a landing **552**. FIG. **5** further illustrates distance markings **D1** and **D2** that are

US 10,077,084 B2

9

further disclosed and discussed with respect to FIG. 7. D1 illustrates a distance from a front end of the vehicle body 502 to a rear most location on the front wheels 542. D2 illustrates a distance from a front end of the vehicle body 502 to a front most location on the front wheels 542. The first distance D1 is greater than the second distance D2. D3 illustrates a distance or horizontal distance between a front most portion and a rear most portion of the front wheel well 544. In an implementation, the entirety of the at least one seat is located within the horizontal distance D3 of the front wheel wells 544.

The vehicle cabin interior 550 includes a number of features to provide comfort and convenience to an operator or passenger of the vehicle 500. In an implementation, the cabin interior 550 includes a cooling appliance 520 and a microwave oven 526 or other small appliance. The cabin interior includes a plurality of storage spaces 522. The cabin interior 550 includes a lower sleeping space 514 and an upper sleeping space 518. The cabin interior includes a display 516 such as a television, monitor, touch screen monitor, computer, and the like. The cabin interior 550 includes at least one cabin window 536.

The cooling appliance 520 includes any of a powered refrigerator, a powered freezer, a powered refrigerator and freezer combination, or a non-powered version of any of the aforementioned cooling appliances. In an implementation, the cooling appliance 520 is located opposite the door (see 110 in FIG. 1). The cooling appliance 520 may be mounted to a wall of the vehicle body 502, and/or it may be mounted to the landing 552, or it may be freestanding. In an embodiment, the cooling appliance 520 is powered by the ESS of the vehicle 500. In an implementation, the cooling appliance 520 includes an internal volume of at least five cubic feet. In an implementation, the cooling appliance 520 includes an internal volume of at least ten cubic feet. In an implementation, the cooling appliance 520 includes an internal volume of at least fifteen cubic feet. In an implementation, the cooling appliance 520 includes an internal volume of at least twenty cubic feet.

In an implementation, the microwave oven 526 is located opposite the door (see 110 in FIG. 1) and is mounted above the cooling appliance 520. It should be appreciated that the microwave oven 526 may be replaced with any other suitable appliance or may be replaced with a storage space without departing from the spirit and scope of the disclosure. In an embodiment, the microwave oven 526 is powered by the ESS of the vehicle 500.

In an implementation, a plurality of storage spaces 522 are built in to the cabin interior 550. It should be appreciated that the cabin interior 550 may include a storage space 522 located in any suitable place. A storage space 522 may be located, for example, underneath the lower sleeping space 514 or above the upper sleeping space 518, underneath the landing 552 flooring, on a backside of a seat 510, above the microwave oven 526, to the side of the cooling appliance 520, or any other suitable location.

In an implementation, the display 516 is mounted to a wall of the cabin interior 550 opposite the door (see 110 in FIG. 1) and between the lower sleeping space 514 and the upper sleeping space 518. The display 516 may include any display known in the art or later discovered such as, for example, a light-emitting diode display, an electroluminescent display, an electronic paper display, a plasma display panel, a liquid crystal display, an organic light-emitting diode display, and the like. The display 516 may include a television, a computer monitor, a touchscreen display, or any other suitable display. The display 516 may be in electronic

10

communication with a network interface, a computing device, or any other suitable appliance. In an embodiment, the display is powered by the ESS of the vehicle 500.

In an implementation, the lower sleeping space 514 and the upper sleeping space 518 are located farther from the front of the vehicle (see 130 in FIG. 1) than the door (see 110 in FIG. 1). That is, the lower sleeping space 514 and the upper sleeping space 518 are located at the backside portion of the cabin interior 550. Each of the sleeping spaces 514, 518 may be mounted to at least one wall of the vehicle 500 and the sleeping spaces 514, 518 may be hinged on one side such that the sleeping space 514, 518 may be hinged and stored away when not in use. Each of the sleeping spaces 514, 518 are accessible from the landing 552. In an implementation, each of the sleeping spaces 514, 518 includes a mattress. In an implementation, at least one of the sleeping spaces 514, 518 includes a standard sized mattress in a twin size, a full size, or a queen size. In an implementation, at least one of the sleeping spaces 514, 518 includes a non-standard size mattress.

Referring now to FIG. 6, a front perspective view of a vehicle 600 illustrating interior components of the vehicle 600 is shown. The vehicle 600 includes at least one seat 610 and a steering wheel 612. The vehicle 600 includes a cabin interior 650. The cabin interior 650 includes a cooling appliance 620, a microwave oven 626 or other small appliance, and a plurality of storage spaces 622. The cabin interior 650 includes a lower sleeping space 614 and an upper sleeping space 618 that form a sleeper in the cabin interior 650. The vehicle 600 includes front wheels 642. The vehicle 600 includes at least one step 640 mounted to the exterior of the vehicle, wherein the at least one step 640 permits a user to safely enter or exit the vehicle 600 through a door (see 110 in FIG. 1). The cabin interior 650 includes a landing 652 adjacent to the door 110 that is configured to accommodate at least one person.

As illustrated in FIG. 6, the cooling appliance 620 and microwave oven 626 extend into the cabin interior 650. In an embodiment, the landing 652 extends from the door 110 to the cooling appliance 620 in one direction and from the lower sleeping space 614 to the backside of the at least one seat 610 in the perpendicular direction. In an implementation, the landing 652 is of a sufficient size to comfortably fit at least one person. In an implementation, there is sufficient vertical space from the landing 652 to the ceiling of the cabin interior 650 for a user to stand in the landing 652 without the need to bend over.

The cabin interior 650 is configured to permit a person to enter the cabin interior 650 through a door 110 and comfortably stand at the landing 652. A person may access either of the lower sleeping space 614 or the upper sleeping space 618 from the landing 652. A person may comfortably access and open either of the cooling appliance 620 and the microwave oven 626 while standing at the landing 652. A person may access the at least one seat 610 from the landing. In an implementation, as illustrated in FIG. 6, the vehicle 600 includes two seats 610 and a user may access either of the two seats from the landing 652 by passing between the two seats 610.

Referring now to FIG. 7, an aerial view of a vehicle 700 showing interior components of the vehicle 700 is shown. The vehicle 700 includes a plurality of front wheels 742 and a plurality of rear wheels 746. The vehicle includes at least one seat and may include a driver's side seat 710 and a passenger's side seat 714. The vehicle includes a steering wheel 712 positioned in front of the driver's side seat 710. The vehicle includes at least one step 740 mounted to the

US 10,077,084 B2

11

exterior of the vehicle **700**. The at least one step **740** may provide access to a door (see **110** in FIG. **1**) or it may not lead to a door. The vehicle **700** includes a cabin interior **750** having a landing **752** and a number of features to provide comfort and convenience to a user. The cabin interior **750** includes a sleeper including a lower sleeping space **714** and an upper sleeping space **718**.

The vehicle **700** includes a front end of the body **724**. The front wheels **742** include a first rear most location **720** that is a first distance **D1** from the front end of the body **724**. The front wheels **742** include a second front most location **722** that is a second distance **D2** from the front end of the body **724**. The first distance **D1** is greater than the second distance **D2**. As illustrated in FIG. **1**, the majority of at least one of the seats **710**, **714** is located within the first distance **D1** of the front wheels **742**. As discussed above, this placement of the at least one seat **710**, **714** is made possible by the vehicle **700** being an electric powered vehicle **700** and not including a combustion engine. A typical semi-truck in the prior art having a combustion engine does not include space for at least one seat to be located in a position above a front wheel relative to the body of the vehicle. In an embodiment, the steering wheel **712**, the at least one seat **710**, **714**, and the controls necessary for operating the vehicle are located in a position proximal to the front of the vehicle **724** where a combustion engine would typically be located in a prior art combustion-based semi-truck. Because an embodiment of the present disclosure is an electric powered semi-truck without a combustion engine, the at least one seat **710**, **714** can be located at a first distance **D1** of the front wheels **742** relative to the front of the vehicle **724**.

In one embodiment, a foremost portion of a door is behind the first distance **D1**. For example, all portions of an opening revealed by a door may be greater than the first distance **D1** from the front of the vehicle. Thus, the door may provide access to a cabin behind a seat, such as a driver's seat or driver compartment. In one embodiment, all portions of a driver's seat, when in a driving position, are within the first distance **D1** of the front of the vehicle. In one embodiment, the foremost part of a door may be located further than the second distance **D2** and/or first distance **D1** from the front of the vehicle.

Referring now to FIG. **8**, an aerial perspective view of a vehicle **800** showing interior components of the vehicle **800** is shown. The vehicle **800** includes an interior cab **850** having a number of features to provide comfort and convenience to a user. In an implementation, the interior cab **850** includes a sleeper consisting of a lower sleeping space **814** and an upper sleeping space **818**. In an implementation, the interior cab **850** includes a cooling appliance **820**, a microwave oven **826**, and a plurality of storage space **822**. The interior cab **850** includes a cabin window **836** and may include at least one sunroof or moon roof (see **138** in FIG. **1**). The vehicle includes a plurality of front wheels **842** and a plurality of rear wheels **846**. The vehicle includes at least one seat **810**, **814** and may include a driver's side seat **810** and a passenger's side seat **814**. The vehicle includes a steering wheel **812** positioned in front of the driver's side seat **810**.

Referring now to FIG. **9**, a front view of a vehicle **900** made in accordance with the principles and teachings of the disclosure is shown. The vehicle **900** includes a front windshield **930**, at least one panoramic window **932**, and at least one cabin window **936**, and at least one roof windows **938**. The vehicle **900** includes a plurality of front wheels **942**, a plurality of front wheel wells **944**, and a plurality of rear wheels **946**.

12

EXAMPLES

The following examples pertain to further embodiments.

Example 1 is a vehicle including a body and a cabin located within the body of the vehicle. The cabin comprises an interior that is configured to accommodate at least one person. The vehicle includes at least one seat located in the interior of the cabin and the seat is configured for seating a user. The vehicle includes at least one door that provides ingress and egress to the interior of the cabin of the vehicle, and the at least one door is located with respect to the body of the vehicle, such that it provides ingress and egress into the cabin from a backside of the seat.

Example 2 is a vehicle as in Example 1, wherein the vehicle is an electric vehicle including a battery pack that is coupled to an electric drive train.

Example 3 is a vehicle as in any of Examples 1-2, wherein the includes a combustion engine configured to generate power by using combustion energy of fuel.

Example 4 is a vehicle as in any of Examples 1-3, wherein the vehicle includes only a single door.

Example 5 is a vehicle as in Example 4, wherein the single door is located on a driver's side of the vehicle.

Example 6 is a vehicle as in Example 4, wherein the single door is located on a passenger's side of the vehicle.

Example 7 is a vehicle as in any of Examples 1-3, wherein the at least one door of the vehicle includes a first door and a second door.

Example 8 is a vehicle as in Example 7, wherein the first door is located on a driver's side of the vehicle and the second door is located on a passenger's side of the vehicle.

Example 9 is a vehicle as in any of Examples 1-8, wherein the door slides on an upper track, a mid-track, and a lower track located externally on the body of the vehicle to open and close the at least one door.

Example 10 is a vehicle as in Example 9, wherein the at least one door moves outward with respect to the body and backward with respect to the at least one seat as the door is moved to an open position.

Example 11 is a vehicle as in Example 10, wherein an activation signal turns on a drive motor to pull the at least one door open and closed.

Example 12 is a vehicle as in Example 1, wherein the at least one door is hinged at one end and attached to the body of the vehicle to open and close the at least one door.

Example 13 is a vehicle as in Example 1, wherein the at least one door is the foremost door providing ingress or egress into the interior of the cabin.

Example 14 is a vehicle as in any of Example 1-13, wherein there is no additional door that is located in front of the at least one door providing ingress or egress into the interior of the cabin.

Example 15 is a vehicle as in any of Examples 1-14, wherein the at least one door includes a peak load sensor configured to sense a threshold, such that when a load on the at least one door is higher than the threshold, a control unit reverses the direction of the at least one door and prohibits the at least one door from closing.

Example 16 is a vehicle as in any of Examples 1-15, wherein the at least one door is located approximately at a midpoint of the body of the vehicle to provide ingress and egress into the cabin.

Example 17 is a vehicle as in any of Examples 1-16, wherein the vehicle is a semi-truck.

Example 18 is a vehicle as in any of Examples 1-17, wherein the vehicle is an electric driven class 7 semi-truck.

US 10,077,084 B2

13

Example 19 is a vehicle as in any of Examples 1-17, wherein the vehicle is an electric driven class 8 semi-truck.

Example 20 is a vehicle as in any of Examples 1-19, wherein the vehicle further comprises a sleeper within the cabin.

Example 21 is a vehicle as in any of Examples 1-20, wherein the at least one door opens into the sleeper of the cabin.

Example 22 is a vehicle as in Example 20, wherein the sleeper includes a bunk bed, a refrigerator having a volume that is at least 15 cubic feet, a table, and a microwave oven.

Example 23 is a vehicle as in any of Examples 1-22, wherein the cabin includes a driver's seat and a passenger's seat, and wherein access to the driver's seat is provided between the passenger's seat and the driver's seat.

Example 24 is a vehicle as in any of Examples 1-23, wherein an opening into the cabin includes a clearance that is at least six feet five inches in height.

Example 25 is a vehicle as in any of Examples 1-24, wherein the vehicle further comprises a sleeper and wherein entry into the cabin of the vehicle provides full access to the at least one seat and the sleeper simultaneously.

Example 26 is a vehicle as in any of Examples 1-25, wherein the vehicle further includes at least one full-size step and at least one hand hold to provide at least two points of leverage for access and entry into the interior of the cabin.

Example 27 is a vehicle as in Example 26, wherein there are two steps and two hand holds that provide four points of leverage for entry into the interior of the cabin, such that a user enters into the cabin facing forward.

Example 28 is a vehicle comprising a body having a front end and a rear end. The vehicle includes a plurality of front wheels located proximally with respect to the body and a plurality of rear wheels located distally with respect to the body. The front wheels include a first rear most location that is a first distance from the front end of the body and a second front most location that is a second distance from the front end of the body. The first distance is greater than the second distance. The vehicle includes a cabin located within the body, wherein the cabin includes an interior with at least one seat located in the interior that is configured for seating at least one person. The majority of the at least one seat is located within the first distance of the front wheels.

Example 29 is a vehicle as in Example 28, wherein the body of the vehicle includes a plurality of front wheel wells that correspond to the plurality of front wheels. The front wheel wells include a front most portion and a rear most portion with a horizontal distance therebetween. The entirety of the at least one seat is located within the horizontal distance of the front wheel wells.

Example 30 is a vehicle as in any of Examples 28-29, wherein the at least one door is located with respect to the body, such that the at least one door opens to provide ingress and egress into the cabin from a backside of at least one seat.

Example 31 is a vehicle as in any of Examples 28-30, wherein the body of the vehicle includes an opening having a width and a height that corresponds with the at least one door, and wherein there is no seat inside the cabin that obstructs the width of the opening.

Example 32 is a vehicle as in any of Examples 28-31, wherein the vehicle is an electric vehicle including a plurality of electric motors and a plurality of gear trains that each correspond with each of the plurality of electric motors.

Example 33 is a vehicle as in any of Examples 28-32, wherein the vehicle includes a combustion engine configured to generate power by using combustion energy of fuel.

14

Example 34 is a vehicle as in any of Examples 28-33, wherein the vehicle includes only a single door.

Example 35 is a vehicle as in Example 34, wherein the single door is located on a driver's side of the vehicle.

Example 36 is a vehicle as in Example 34, wherein the single door is located on a passenger's side of the vehicle.

Example 37 is a vehicle as in any of Examples 28-33, wherein the at least one door of the vehicle includes a first door and a second door.

Example 38 is a vehicle as in Example 37, wherein the first door is located on a driver's side of the vehicle and the second door is located on a passenger's side of the vehicle.

Example 39 is a vehicle as in any of Examples 28-38, wherein the at least one door slides on an upper track, a mid-track, and a lower track located externally on the body of the vehicle to open and close the at least one door.

Example 40 is a vehicle as in Example 39, wherein the at least one door moves outward with respect to the body and backward with respect to the at least one seat as the door is moved to an open position.

Example 41 is a vehicle as in Example 40, wherein an activation signal turns on a drive motor to pull the at least one door open and closed.

Example 42 is a vehicle as in any of Examples 28-38, wherein the at least one door is hinged at one end and attached to the body of the vehicle to open and close the at least one door.

Example 43 is a vehicle as in any of Examples 28-42, wherein the at least one door is the foremost door providing ingress or egress into the interior of the cabin.

Example 44 is a vehicle as in any of Examples 28-43, wherein there is no additional door that is located in front of the at least one door providing ingress or egress into the interior of the cabin.

Example 45 is a vehicle as in any of Examples 28-44, wherein the at least one door includes a peak load sensor configured to sense a threshold, such that when a load on the at least one door is higher than the threshold a control unit reverses the direction of the at least one door and keeps the at least one door from closing.

Example 46 is a vehicle as in any of Examples 28-45, wherein the at least one door is located approximately at a midpoint of the body of the vehicle to provide ingress and egress into the cabin.

Example 47 is a vehicle as in any of Examples 28-46, wherein the vehicle is a semi-truck.

Example 48 is a vehicle as in any of Examples 28-47, wherein the vehicle is an electric driven class 7 semi-truck.

Example 49 is a vehicle as in any of Examples 28-47, wherein the vehicle is an electric driven class 8 semi-truck.

Example 50 is a vehicle as in any of Examples 28-49, wherein the vehicle further comprises a sleeper within the cabin.

Example 51 is a vehicle as in any of Examples 28-50, wherein the vehicle further includes a sleeper within the cabin and the at least one door opens into the sleeper of the cabin.

Example 52 is a vehicle as in any of Examples 28-51, wherein the vehicle further includes a sleeper within the cabin and the sleeper includes a bunk bed, a refrigerator having a volume that is at least 15 cubic feet, a table, and a microwave oven.

Example 53 is a vehicle as in any of Examples 28-52, wherein the vehicle further includes a sleeper within the cabin and wherein entry into the cabin of the vehicle provides full access to the at least one seat and the sleeper simultaneously.

US 10,077,084 B2

15

Example 54 is a vehicle as in any of Examples 28-53, wherein the opening into the cabin includes a height that is at least six feet five inches.

Example 55 is a vehicle as in any of Examples 28-54, wherein the cabin includes a driver's seat and a passenger's seat, and wherein access to the driver's seat is provided between the passenger's seat and the driver's seat.

Example 56 is a vehicle as in any of Examples 28-55, wherein the vehicle further includes at least one full-size step and at least one handhold to provide at least two points of leverage for access and entry into the interior of the cabin.

Example 57 is a vehicle as in any of Examples 28-56, wherein the vehicle further includes two steps and two handholds that provide four points of leverage for entry into the interior of the cabin, such that a user enters into the cabin facing forward.

Example 58 is a vehicle as in any of Examples 1-57, wherein the vehicle is a hybrid vehicle comprising electrical and combustion components.

In the above disclosure, reference has been made to the accompanying drawings, which form a part hereof, and in which is shown by way of illustration specific implementations in which the disclosure may be practiced. It is understood that other implementations may be utilized and structural changes may be made without departing from the scope of the present disclosure. References in the specification to "one embodiment," "an embodiment," "an example embodiment," etc., indicate that the embodiment described may include a particular feature, structure, or characteristic, but every embodiment may not necessarily include the particular feature, structure, or characteristic. Moreover, such phrases are not necessarily referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with an embodiment, it is submitted that it is within the knowledge of one skilled in the art to affect such feature, structure, or characteristic in connection with other embodiments whether or not explicitly described.

While various embodiments of the present disclosure have been described above, it should be understood that they have been presented by way of example only, and not limitation. It will be apparent to persons skilled in the relevant art that various changes in form and detail can be made therein without departing from the spirit and scope of the disclosure. Thus, the breadth and scope of the present disclosure should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents. The foregoing description has been presented for the purposes of illustration and description. It is not intended to be exhaustive or to limit the disclosure to the precise form disclosed. Many modifications and variations are possible in light of the above teaching. Further, it should be noted that any or all of the aforementioned alternate implementations may be used in any combination desired to form additional hybrid implementations of the disclosure.

Further, although specific implementations of the disclosure have been described and illustrated, the disclosure is not to be limited to the specific forms or arrangements of parts so described and illustrated. The scope of the disclosure is to be defined by the claims appended hereto, any future claims submitted here and in different applications, and their equivalents.

What is claimed is:

1. A semi-truck vehicle comprising:
an electric drive train;
a body;

16

a cabin located within the body of the semi-truck vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person;

a seat located in the interior of the cabin that is configured for seating a user; and

a door comprising a width extending a horizontal length of the door, wherein the door provides ingress and egress to the interior of the cabin of the semi-truck vehicle;

wherein the door is located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and the width of the door is disposed between the frontmost side of the door and a rearmost side of the door, at least a portion of the door being positioned behind the seat and at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well such that the door opens to provide ingress and egress into the cabin from a backside of the seat; and

wherein the door is the foremost door providing ingress or egress into the interior of the cabin.

2. The semi-truck vehicle of claim 1, wherein the semi-truck vehicle is an electric vehicle comprising a battery pack that is coupled to an electric drive train.

3. The semi-truck vehicle of claim 1, wherein the semi-truck vehicle comprises a combustion engine configured to generate power by using combustion energy of fuel.

4. The semi-truck vehicle of claim 1, wherein the semi-truck vehicle comprises only a single door.

5. The semi-truck vehicle of claim 4, wherein the single door is located on a left side when the user is seated in the seat of the semi-truck vehicle.

6. The semi-truck vehicle of claim 4, wherein the single door is located on a right side when the user is seated in the seat of the semi-truck vehicle.

7. The semi-truck vehicle of claim 1, wherein the door of the semi-truck vehicle comprises a first door and a second door.

8. The semi-truck vehicle of claim 7, wherein the first door is located on a left side when the user is seated in the seat of the semi-truck vehicle and the second door is located on a right side when the user is seated in the seat of the semi-truck vehicle.

9. The semi-truck vehicle of claim 1, wherein the door slides on an upper track, a mid-track, and a lower track located externally on the body of the semi-truck vehicle to open and close the door.

10. The semi-truck vehicle of claim 9, wherein the door moves outward with respect to the body and backward with respect to the seat as the door is moved to an open position.

11. The semi-truck vehicle of claim 10, wherein an activation signal turns on a drive motor to pull the door open and closed.

12. The semi-truck vehicle of claim 1, wherein the door is hinged at one end and attached to the body of the semi-truck vehicle to open and close the door.

13. The semi-truck vehicle of claim 1, wherein the door comprises a peak load sensor configured to sense a threshold, such that when a load on the door is higher than the threshold a control unit reverses the direction of the door and keeps the door from closing.

14. The semi-truck vehicle of claim 1, wherein the door is located approximately at a midpoint of the body of the semi-truck vehicle to provide ingress and egress into the cabin.

15. The semi-truck vehicle of claim 1, wherein the vehicle is an electric driven class 7 semi-truck.

US 10,077,084 B2

17

16. The semi-truck vehicle of claim 1, wherein the vehicle is an electric driven class 8 semi-truck.

17. The semi-truck vehicle of claim 1, wherein the vehicle further comprises a sleeper within the cabin.

18. The semi-truck vehicle of claim 17, wherein the door opens into the sleeper of the cabin. 5

19. The semi-truck vehicle of claim 17, wherein the sleeper comprises a bunk bed, a cooling appliance having a volume that is at least 15 cubic feet, and a microwave oven.

20. The semi-truck vehicle of claim 17, wherein entry into the cabin of the semi-truck vehicle provides full access to the seat and the sleeper simultaneously. 10

21. The semi-truck vehicle of claim 1, wherein the cabin comprises a first seat and a second seat, and wherein access to either of the first seat or the second seat is provided between the second seat and the first seat. 15

22. The semi-truck vehicle of claim 1, wherein an opening into the cabin comprises a clearance that is at least six feet five inches in height.

23. The semi-truck vehicle of claim 1, wherein the semi-truck vehicle further comprises at least one full-size step and at least one hand hold to provide at least two points of leverage and for access and entry into the interior of the cabin. 20

24. The semi-truck vehicle of claim 23, wherein there are two steps and two handholds that provide four points of leverage for entry into the interior of the cabin, such that a user enters into the cabin facing forward. 25

18

25. The semi-truck vehicle of claim 1, wherein the semi-truck vehicle is a hybrid vehicle comprising electrical and combustion components.

26. A semi-truck vehicle comprising:

an electric drive train;

a body;

a cabin located within the body of the vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person;

a first seat and a second seat located in the interior of the cabin;

a door that provides ingress and egress to the interior of the cabin, the door being located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and at least a portion of the door being positioned behind the first seat, at least a portion of the first seat is disposed to be forward of a line defining the rearmost portion of the front wheel well; and

an entryway provided between the first seat and the second seat, wherein the entryway comprises a vertical height extending from a floor of the cabin to at least a top of the first seat or the second seat;

wherein the entryway provides access to either of the first seat or the second seat.

* * * * *

Exhibit B

Filed: September 24, 2019

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.

Petitioner,

v.

NIKOLA CORPORATION

Patent Owner.

Case No. IPR2019-01646

U.S. Patent No. 10,077,084

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 10,077,084**

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

TABLE OF CONTENTS

	Page No.
I. INTRODUCTION, STATE OF THE PRIOR ART, AND SUMMARY OF CHALLENGE TO THE '084 PATENT	1
II. CLAIM CONSTRUCTION	8
A. “adjacent to” (all claims).....	8
B. “electric drive train” (all claims).....	12
C. Reservation of rights	12
III. LEVEL OF ORDINARY SKILL IN THE ART	13
IV. EXPLANATION WHY THE CLAIMS ARE UNPATENTABLE.....	13
A. Background and Prior Art Status of the Asserted References	14
1. The Earliest Effective Filing Date of the '084 Patent.....	14
2. Modec.....	14
3. Messano	15
4. Fleet Transport	16
5. Future Truck Report.....	18
6. Marlowe	20
7. Eltra	21
8. Racz.....	21
9. Kia	21

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

TABLE OF CONTENTS

(cont'd)

	Page No.
10. Plummer	22
11. Man Annual Report.....	23
12. Freightliner.....	25
B. Ground 1: Claims 1-5, 15-16, and 25 would have been obvious over Modec and Messano	27
1. Claim 1	27
a. “A semi-truck vehicle”	27
b. “an electric drive train”	28
c. “a body”	29
d. “a cabin located within the body of the semi- truck vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person”	30
e. “a seat located in the interior of the cabin that is configured for seating a user”	32
f. “a door comprising a width extending a horizontal length of the door, wherein the door provides ingress and egress to the interior of the cabin of the semi-truck vehicle”	33
g. “wherein the door is located on the body such that the frontmost side of the door is adjacent to a rearmost portion of a front wheel well”	34

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

TABLE OF CONTENTS *(cont'd)*

	Page No.
h. “and the width of the door is disposed between the frontmost side of the door and a rearmost side of the door”	38
i. “at least a portion of the door being positioned behind the seat and at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well such that the door opens to provide ingress and egress into the cabin from a backside of the seat”	39
j. “wherein the door is the foremost door providing ingress or egress into the interior of the cabin.”	40
k. A POSITA would have found it obvious, and would have been motivated, to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle.”	41
2. Claim 2: “wherein the semi-truck vehicle is an electric vehicle comprising a battery pack that is coupled to an electric drive train.”	44
3. Claims 3 and 25: “wherein the semi-truck vehicle comprises a combustion engine configured to generate power by using combustion energy of fuel” and “wherein the semi-truck vehicle is a hybrid vehicle comprising electrical and combustion components.”	46
4. Claim 4: “wherein the semitruck vehicle comprises only a single door.”	46

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

TABLE OF CONTENTS

(cont’d)

	Page No.
5. Claim 5: “wherein the single door is located on a left side when the user is seated in the seat of the semi-truck vehicle.”	47
6. Claim 15: “wherein the vehicle is an electric driven class 7 semi-truck.”	47
7. Claim 16: “wherein the vehicle is an electric driven class 8 semi-truck.”	48
C. Ground 2: Claim 6 would have been obvious over Modec, Messano, and the Future Truck Report	48
D. Ground 3: Claims 7, 8, 21, and 26 would have been obvious over Modec, Messano, and Marlowe	49
1. Claim 7: “wherein the door of the semi-truck vehicle comprises a first door and a second door.”	49
2. Claim 8: “wherein the first door is located on a left side when the user is seated in the seat of the semi-truck vehicle and the second door is located on a right side when the user is seated in the seat of the semi-truck vehicle.”	51
3. Claim 21	52
a. “wherein the cabin comprises a first seat and a second seat, and”	52
b. “wherein access to either of the first seat or the second seat is provided between the second seat and the first seat.”	53
4. Claim 26	54

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

TABLE OF CONTENTS *(cont'd)*

		Page No.
a.	“A semi-truck vehicle”	54
b.	“an electric drive train”	54
c.	“a body”	54
d.	“a cabin located within the body of the vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person”	54
e.	“a first seat and a second seat located in the interior of the cabin”	55
f.	“a door that provides ingress and egress to the interior of the cabin”	55
g.	“the door being located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well”	56
h.	“and at least a portion of the door being positioned behind the first seat, at least a portion of the first seat is disposed to be forward of a line defining the rearmost portion of the front wheel well”	56
i.	an entryway provided between the first seat and the second seat, wherein the entryway comprises a vertical height extending from a floor of the cabin to at least a top of the first seat or the second seat;	56
j.	“wherein the entryway provides access to either of the first seat or the second seat.”	58

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

TABLE OF CONTENTS (cont'd)

	Page No.
k. It would have been obvious, and a POSITA would have a motivation, to use Modec's relative positioning of the door, seat, and front wheel well with a "semi-truck vehicle."	59
E. Ground 4: Claims 9-11 would have been obvious over Modec, Messano, and Eltra	59
1. Claim 9: "wherein the door slides on an upper track, a mid-track, and a lower track located externally on the body of the semi-truck vehicle to open and close the door."	59
2. Claim 10: "wherein the door moves outward with respect to the body and backward with respect to the seat as the door is moved to an open position."	61
3. Claim 11: "wherein an activation signal turns on a drive motor to pull the door open and closed."	62
F. Ground 5: Claim 12 would have been obvious over Modec, Messano, and Racz.....	63
G. Ground 6: Claim 13 would have been obvious over Modec, Messano, and Kia	64
H. Ground 7: Claim 14 would have been obvious over Modec, Messano, and Marlowe	66
I. Ground 8: Claims 17 and 19 would have been obvious over Modec, Messano, and Plummer	67
1. Claim 17: "wherein the vehicle further comprises a sleeper within the cabin."	67

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

TABLE OF CONTENTS (*cont'd*)

	Page No.
2. Claim 19: “wherein the sleeper comprises a bunk bed, a cooling appliance having a volume that is at least 15 cubic feet, and a microwave oven.”	68
J. Ground 9: Claims 18 and 20 would have been obvious over Modec, Messano, and Marlowe	69
1. Claim 18: “wherein the door opens into the sleeper of the cabin.”	69
2. Claim 20: “wherein entry into the cabin of the semi-truck vehicle provides full access to the seat and the sleeper simultaneously.”	71
K. Ground 10: Claim 22 would have been obvious over Modec, Messano, and the Man Annual Report.....	73
L. Ground 11: Claims 23-24 would have been obvious over Modec, Messano, and Freightliner.....	76
1. Claim 23: “wherein the semi-truck vehicle further comprises at least one full-size step and at least one hand hold to provide at least two points of leverage and for access and entry into the interior of the cabin.”	76
2. Claim 24: “wherein there are two steps and two handholds that provide four points of leverage for entry into the interior of the cabin, such that a user enters into the cabin facing forward.”	78
V. SECONDARY CONSIDERATIONS DO NOT OVERCOME THE STRONG EVIDENCE OF OBVIOUSNESS.....	80
VI. MANDATORY NOTICES, FEES, AND STANDING.....	81

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

TABLE OF CONTENTS
(*cont'd*)

	Page No.
A. Real Party-In-Interest (37 C.F.R. §42.8(b)(1))	81
B. Related Matters (37 C.F.R. §42.8(b)(2)).....	81
C. Lead and Backup Counsel (37 C.F.R. §42.8(b)(3))	82
D. Service Information (37 C.F.R. §42.8(b)(4))	82
E. Payment of Fees	82
F. Grounds For Standing	82
VII. CONCLUSION.....	83

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

TABLE OF AUTHORITIES

Page No(s).

<i>Ericsson, Inc. v. Intellectual Ventures I LLC</i> , IPR2014-00527, Paper 41 (P.T.A.B. May 18, 2015)	17
<i>Leapfrog Enters. Inc. v. Fisher-Price, Inc.</i> , 485 F.3d 1157 (Fed. Cir. 2007)	80
<i>Newell Cos., Inc. v. Kenney Mfg. Co.</i> , 864 F.2d 757 (Fed. Cir. 1988)	80
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005) (<i>en banc</i>)	8, 9

OTHER AUTHORITIES

35 U.S.C. § 102	<i>passim</i>
35 U.S.C. § 282	8
37 C.F.R. §42.8	80, 81
37 C.F.R. §42.15	81
37 C.F.R. § 42.100	8

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

TABLE OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 10,077,084 (“the ’084 patent”).
1002	Declaration of Brian C. Baker.
1003	File History of the ’084 patent.
1004	PCT Application Publication No. WO 2009/001086 A2 to Modec Limited (“Modec”).
1005	U.S. Patent No. 7,338,335 to Messano (“Messano”).
1006	October 2010 <i>Fleet Transport</i> magazine (“Fleet Transport”).
1007	The Maintenance Council of the American Trucking Association, Future Truck Committee Information Report: 2001-2, 3 (Mike Malecha et al., eds., March 2001) (“Future Truck Report”).
1008	U.S. Patent No. 4,932,716 to Marlowe (“Marlowe”).
1009	PCT Application Publication No. 1981/001587 A1 to Eltra Corporation (“Eltra”).
1010	U.S. Patent Application Publication No. 2003/0006628 A1 to Racz (“Racz”).
1011	2013 Kia Sedona User Manual (“Kia”).
1012	U.S. Patent No. 7,145,788 B2 to Plummer (“Plummer”).
1013	2012 Annual Report of the Man Group (“Man Annual Report”).
1014	Loczi, Josef. “Ergonomics Program at Freightliner.” SAE Transactions, vol. 109, 2000, pp. 462–469 (“Freightliner”).

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

1015	U.S. Patent Application Publication No. US 2008/0164724 A1 to Burnett (“Burnett”).
1016	<i>Adjacent</i> , <u>Merriam-Webster’s Unabridged Dictionary</u> (2019).
1017	<i>Curriculum Vitae</i> of Brian Baker.
1018	Printout of JSTOR webpage referring to Loczi, Josef. “Ergonomics Program at Freightliner.” SAE Transactions, vol. 109, 2000, pp. 462–469.
1019	Images accessed from JSTOR webpage of Loczi, Josef. “Ergonomics Program at Freightliner.” SAE Transactions, vol. 109, 2000, pp. 462–469.
1020	U.S. Patent Publication No. 2008/0191515 to Hollenbeck (“Hollenbeck”).
1021	U.S. Patent Publication No. 2011/0121606 to Engelbrecht (“Engelbrecht”).

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Tesla, Inc. (“Petitioner”) requests inter partes review of claims 1-26 of U.S. Patent No. 10,077,084 (Ex. 1001, “the ’084 patent”), purportedly owned by Nikola Corporation (“Patent Owner”).

I. INTRODUCTION, STATE OF THE PRIOR ART, AND SUMMARY OF CHALLENGE TO THE ’084 PATENT

On May 1, 2018, Patent Owner Nikola filed a lawsuit against Petitioner Tesla, Inc. for infringement of three design patents. On September 26, 2018, Nikola filed a Second Amended Complaint in that lawsuit and added an allegation that Tesla, Inc. was also infringing U.S. Patent 10,077,084. This request to invalidate the ’084 patent is responsive to the allegations made by Nikola in that lawsuit.

Less than four years ago, the ’084 patent was filed by the Applicants, claiming they had invented a new “semi-truck door” design “that allows a user to safely and comfortably enter and exit the vehicle.” Ex. 1001 at 2:21-23. They did not allege they had invented semi-trucks or semi-trucks with electric drive trains. All they asserted they had invented was a new door position that allegedly provided a better way to get in and out of the semi-truck. Indeed, they described the technical field of the alleged invention as “systems, methods, and devices for an automobile *door* or window” and, in particular, “methods, systems, and devices for a *door on a semi-truck vehicle*.” *Id.* at 1:27-30 (emphases added).

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Applicants explained that, in the prior art:

Vehicle doors, and particularly semi-truck doors, often provide immediate access to a seat located in the body of the vehicle. The doors are often hinged and require a user to enter or exit the vehicle at an angle that may be uncomfortable or even dangerous. Semi-truck doors and seats are located a significant distance above the ground and a user must be cautious to avoid injury when ascending the steps to the semi-truck door, opening the hinged semi-truck door, and sliding on to the seat while closing the hinged door.

Id. at 1:36-45. Of course, Applicants were not the first to recognize that climbing through a door directly into a semi-truck seat may be uncomfortable or dangerous. Indeed, by mentioning these disadvantages of the traditional position of semi-truck doors in the background section of the '084 patent, Applicants admitted these disadvantages were already appreciated in the industry. As early as 2001, a trucking industry council of the American Trucking Associations published a report showing that the traditional position of semi-truck doors is ergonomically disadvantageous and unsafe, resulting in a relatively high level of driver injuries caused by slips. Ex. 1007 at 2-4.

Applicants claimed to have overcome these disadvantages by coming up with the idea of positioning the door so it allows the driver to enter the cabin from behind the seat. Ex. 1001 at 2:20-31; Ex. 1003, 55 (claim 1). It is non-sensical to think Applicants were the first to come up with that idea in late 2015. In fact, the

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

same 2001 trucking industry report that identified the disadvantages of traditional semi-truck door positioning also suggested that positioning the door behind the seat to provide rear entry into the cabin would make entry into the vehicle easier and increase safety by reducing driver injuries caused by slips. Ex. 1007 at 2-4.

Further, multiple prior art references show that positioning the door to allow rear-entry into a truck cabin and to avoid the need to climb directly into the seat was well known and common years before Applicants' alleged late-2015 invention. The prior art cited by the Examiner during prosecution of the '084 patent established that fact. The Examiner cited Hollenbeck, a publication of a patent application filed in 2005 and published in 2008, which discloses a rear-entry door (31) in a semi-truck:

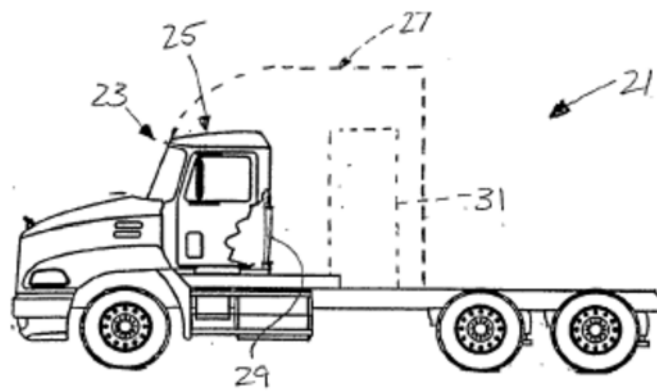


FIG. 1

Ex. 1003, 135-140; Ex. 1020, Fig. 1. The Examiner also cited Engelbrecht, a publication of a patent application with a provisional filing date in 2009 and a

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

publication date in 2011, which discloses a rear-entry door (37) in a recreational vehicle:

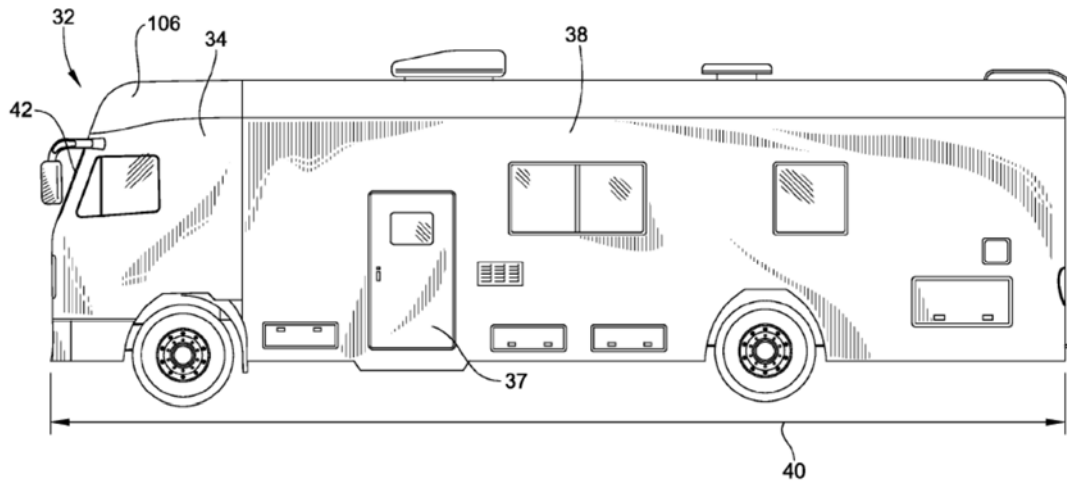


FIG. 3

Ex. 1003, 253-261; Ex. 1021, Fig. 3. Therefore, the fundamental concept Applicants had claimed as their invention—positioning the door so the driver can enter the cabin from behind the seat—is indisputably old and unpatentable.

Applicants did not add any significant innovation to their claims to overcome the Examiner's rejection. Instead, they made the following claim amendment to recite more precise relative positioning between the door, front wheel well, and seat (added language underlined; deleted language in strikethrough):

wherein the door is located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and the width of the door is disposed between the frontmost side of the door and the rearmost side of the door, at least a portion of the door being

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

positioned behind the seat and at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well ~~with respect to the body, such that a majority of the width of the door is located at a backside of the seat when the door is in a closed position,~~ such that the door opens to provide ingress and egress into the cabin from a backside of the seat;

Ex. 1003, 300. The Examiner relied on this amendment as “[t]he primary reason for the allowance of the claims.” *Id.*, 328.

While this amendment trivially distinguished the claims from the prior art known to the Examiner, it was not innovative to position the entry door adjacent to the front wheel well in late 2015. In fact, the prior art not known to the Examiner shows that the exact door, front wheel well, and seat alignment configuration claimed by Applicants was known years before the alleged invention. That configuration was included in a proposed “concept truck” at least as early as October 2010, when the cover of *Fleet Transport* magazine showed a picture of a semi-truck with the frontmost side of its frontmost door adjacent to and behind the rearmost portion of the front wheel well.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Ex. 1006 at 1. The picture does not show the seat because the door is closed and the windows are darkly tinted. But the customary and obvious placement of a seat near the front of the windshield would put at least part of the seat in front of the rearmost portion of the front wheel well and would put at least a portion of the door behind the seat. Ex. 1002 ¶ 49.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

In addition, a PCT application of Modec Limited published on December 31, 2008 expressly discloses the exact door, seat, and wheel well alignment claimed in the '084 patent:

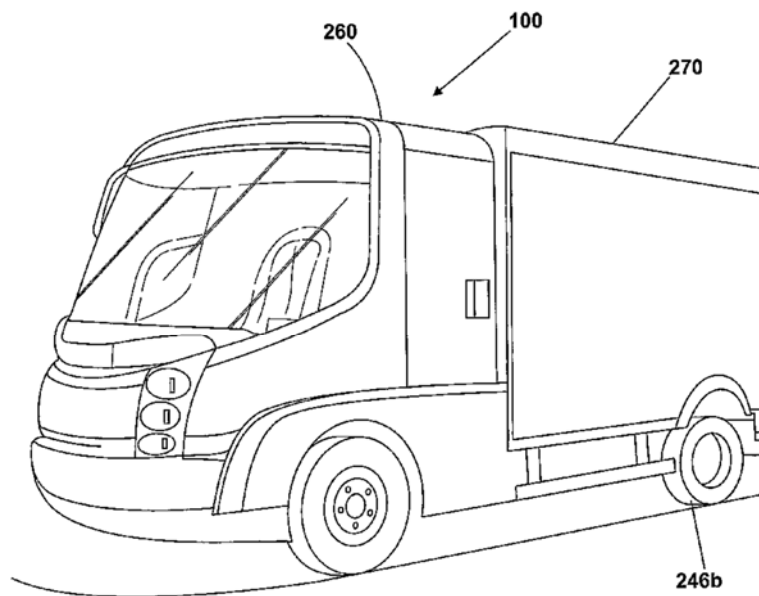


Fig. 1

Ex. 1004, Fig. 1. Modec discloses use of the disclosed door, seat, and wheel well alignment with *any* electric commercial vehicle. Ex. 1004 at 14:30-15:2. While Modec does not specifically mention a “semi-truck vehicle,” it would have at least encouraged a person of ordinary skill in the art (“POSITA”)—especially one concerned with the well-known known comfort and safety problem of requiring the driver to climb directly into a semi-truck seat—to position the door, seat, and wheel well of an electric semi-truck in the manner disclosed by Modec. Ex. 1002 ¶ 86. Further, U.S. Patent No. 7,338,335 to Messano, which issued in 2008 based on applications dating back to 2001, expressly teaches that electric drive trains can be

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

used with semi-trucks and a wide variety of other vehicles. *Id.* ¶ 87. Accordingly, the claimed door position recited in the '084 patent is simply not new or non-obvious based on what was well known years before the priority date of the '084 patent.

The other claim limitations do not add anything beyond well-known and conventional components of electric semi-truck vehicles. Every electric semi-truck vehicle has the claimed electric drive train, body, cabin, seat, and door. The evidence shows beyond dispute that the prior art discloses or makes obvious each and every one of these claim limitations, in addition to the specific door, seat, and wheel well alignment that Applicants added to get their claims allowed. Therefore, the Board should institute trial and hold the claims of the '084 patent unpatentable.

II. CLAIM CONSTRUCTION

The claims are to be construed under the *Phillips* claim construction standard applicable in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b); *see Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*).

A. “adjacent to” (all claims)

Every claim includes the following limitation of independent claims 1 and 26: “a frontmost side of the door is ***adjacent to*** a rearmost portion of a front wheel well.” Ex. 1001, claims 1, 26 (emphasis added).

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

The correct construction of “adjacent to” under the applicable *Phillips* claim construction standard is “nearby but not touching.” Ex. 1002 ¶¶ 35-42. This conclusion is supported by a thorough analysis of the customary and ordinary meaning of “adjacent to” in the context of the claim language itself, the specification, and the file history of the ’084 patent. *Id.* Key portions of that analysis are summarized below.

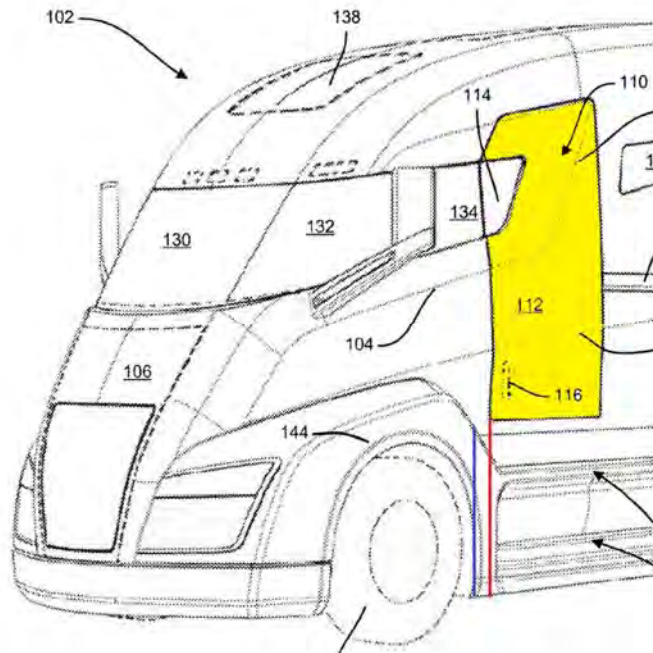
Dictionary definitions show the customary and ordinary meaning of the common English phrase “adjacent to” is “nearby but not touching.” *Id.* ¶ 36. The specification also supports construing “adjacent to” to mean “nearby but not touching.” The most relevant paragraph explains that the front of the door is nearby, but not touching, the backside of the front wheel well:

The front of the vehicle body **102** is denoted by the front windshield **130** and a front side of the door **110** is located *adjacent to* a backside of the front wheel well **144**. Alternatively, a portion of the door **110** is located above the front wheel well **144**. In an implementation, a front side of the door **110** is located at least six inches behind a backside of the front wheel well **144**. In an implementation, a front side of the door **110** is located at least twelve inches behind a backside of the front wheel well **144**. In an implementation, a front side of the door is located at least eighteen inches behind a backside of the front wheel well **144**.

Ex. 1001 at 5:23-33 (bolded reference numerals in original; other emphasis added).

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

Figure 1 of the '084 patent also illustrates that the front (red line) of the door (yellow) is nearby, but not touching, the back (blue line) of the front wheel well:



Ex. 1001, Fig. 1 (annotations added).

After the sentence using “adjacent to,” the specification states: “Alternatively, a portion of the door **110** is located above the front wheel well **144**.” In the context of the entire '084 patent, this sentence does not mean the “adjacent to” limitation *excludes* positioning the front of the door above a portion of the wheel well. The “adjacent to” language also does not require the front of the door to be horizontally located *behind* the wheel well. The “adjacent to” language is satisfied as long as the front of the door is nearby, but not touching, the back of the front wheel well. Ex. 1002 ¶¶ 37-40.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

The file history of the '084 patent also supports this construction. Applicants added the “adjacent to” language to overcome two prior art references, Hollenbeck and Engelbrecht, that disclose a relatively large gap between the back of the front wheel well and the front of the door:

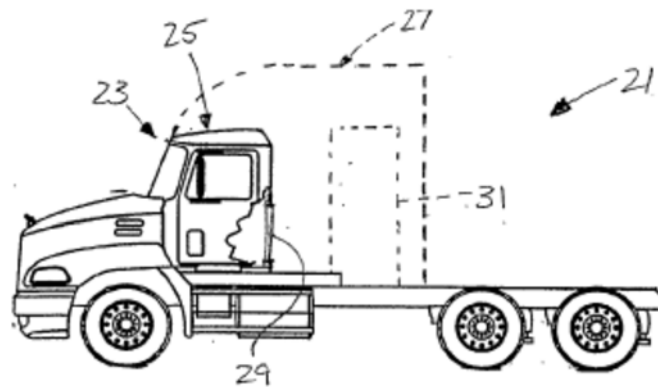


FIG. 1

Ex. 1020, Fig. 1.

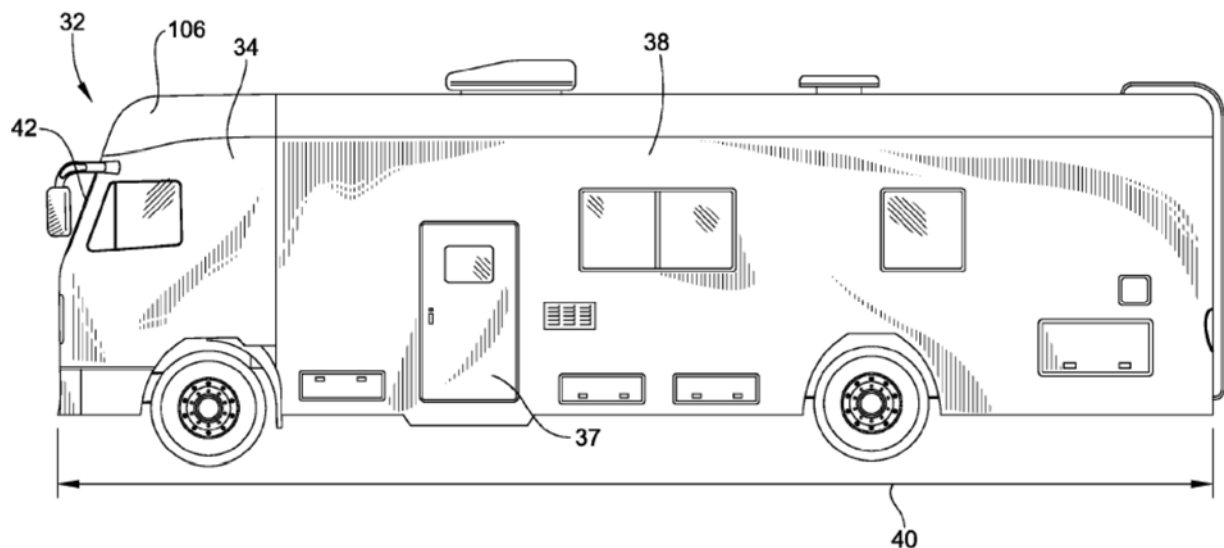


FIG. 3

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Ex. 1021, Fig. 3. The “adjacent to” language overcame these references by requiring the door to be nearby, but not touching, the wheel well. Ex. 1002 ¶ 41.

Accordingly, the Board should construe “adjacent to” to mean “nearby but not touching.”

B. “electric drive train” (all claims)

Every claim includes the following limitation of independent claims 1 and 26: “an electric drive train.” Ex. 1001, claims 1, 26.

This limitation would be readily understood by a POSITA and does not need an express construction. However, to avoid any possible confusion, Petitioner requests that the Board find that the “electric drive train” limitation does not require a purely electric vehicle that lacks an internal combustion engine. Indeed, both the claims and the specification show that the claims encompass hybrid electric vehicles with both “an electric drive train” and a “combustion engine.” Ex. 1001, claims 3 and 25; 13:61-66 (Examples 32 & 33).

C. Reservation of rights

The Board need only construe claim terms as necessary to resolve the parties’ disputes. Petitioner does not believe that construction of any claim terms beyond those identified above is necessary to resolve the issues presented in this Petition or likely to be in dispute in this proceeding. However, should Patent Owner offer a claim construction for any claim term, Petitioner reserves the right

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

to offer a responsive construction with supporting evidence.

In different proceedings, it may be necessary to construe additional claim terms in order to resolve the disputes at issue in those proceedings. It may also be necessary in different proceedings to add clarification to constructions of claim terms construed in this proceeding in order to resolve different disputed issues. By way of example and not limitation, a district court may need to construe additional terms or add clarification to constructions of terms construed in this proceeding in order to resolve disputed issues related to infringement. Petitioner reserves the right to present additional claim construction arguments or evidence in other proceedings.

III. LEVEL OF ORDINARY SKILL IN THE ART

The field of the invention is “automotive design.” Ex. 1002 ¶¶ 14-15. The POSITA at the time of the patent would have had a Bachelor of Science degree in an industrial design field and two years of experience in automotive design. *Id.* ¶ 17.

IV. EXPLANATION WHY THE CLAIMS ARE UNPATENTABLE

The grounds of unpatentability set forth herein are fully supported by thorough expert analysis conducted by Brian C. Baker, an expert with approximately 40 years of experience in the field of automotive design. Ex. 1002 ¶ 1. Mr. Baker conducted his own analysis to arrive at his own opinions and

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

conclusions based on his consideration of the '084 patent, the prior art, and other materials identified in his declaration. *Id.* Mr. Baker did not review this Petition or base his analysis, opinions, and conclusions on the Petition. *Id.*

A. Background and Prior Art Status of the Asserted References

1. The Earliest Effective Filing Date of the '084 Patent

The '084 patent is a post-AIA patent with an earliest effective filing date of December 30, 2015. Ex. 1001 at 2. Petitioner does not concede that the '084 patent is entitled to its earliest effective filing date. However, because all references that Petitioner relies upon in this Petition are prior art to the '084 patent even if the patent is entitled to its earliest effective filing date, the Board need not determine whether the '084 patent is entitled to its earliest effective filing date.

2. Modec

PCT Application Publication No. WO 2009/001086 A2 to Modec Limited (“Modec,” Ex. 1004) was published on December 31, 2008. Ex. 1004 at 1. Modec is prior art to the '084 patent under at least post-AIA 35 U.S.C. § 102(a)(1). Because Modec’s publication occurred more than one year before the earliest effective filing date of the '084 patent, the exceptions of post-AIA 35 U.S.C. § 102(b)(1) do not apply to Modec. Modec was not cited by the Examiner during prosecution. Ex. 1001 at 1-2.

Modec discloses the “electric vehicle 100” illustrated by Modec’s Figure 1,

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

reproduced below:

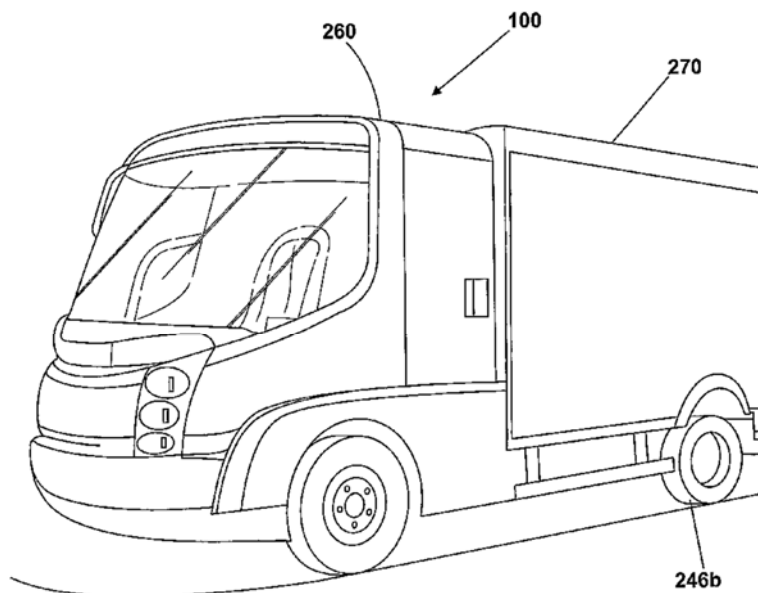


Fig. 1

Ex. 1004, Fig. 1. Figure 1 graphically discloses the relative positioning of the door, seat, and front wheel well. While Figure 1 depicts a “specialist delivery vehicle,” Modec expressly discloses the use of the disclosed door, seat, and wheel well alignment with *any* electric commercial vehicle. *Id.* at 14:30-15:2.

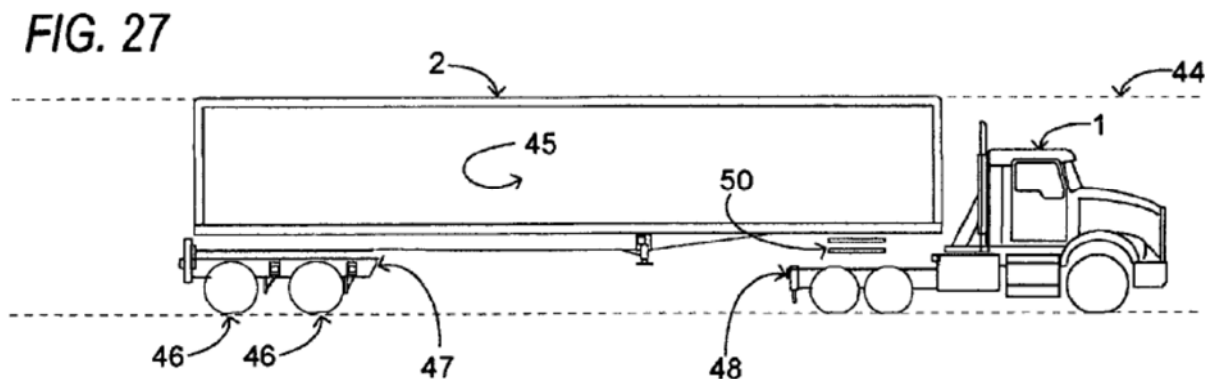
3. Messano

U.S. Patent No. 7,338,335 to Messano (“Messano,” Ex. 1005) issued March 4, 2008. Ex. 1005, cover. Messano is prior art to the ’084 patent under at least post-AIA 35 U.S.C. § 102(a)(1) and the exceptions of post-AIA 35 U.S.C. § 102(b)(1) do not apply. Messano was not cited by the Examiner during prosecution. Ex. 1001 at 1-2.

Messano discloses a semi-truck with an electric drive train. Messano

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

specifically discloses that “this present invention is for an electric vehicle which does not have a conventional driveline.” Ex. 1005 at 4:10-11. Messano further discloses “Road-Wheel Modules provide the motive system for the vehicle and vehicle trailers. A Road-Wheel Module consists of an electric drive motor.” *Id.* at 4:26-28. Messano expressly discloses the use of the disclosed electric drive train with a “semi-truck vehicle,” as depicted by Figure 27 of Messano, reproduced below:



Id., Fig. 27. In addition, Messano establishes that it was well known to use an electric drive train with a wide variety of vehicles, including “heavy-duty long-haul vehicles” and “medium and light duty vehicles (trucks, buses, vans, SUVs, recreational vehicles, and the like).” *Id.*, Abstract.

4. Fleet Transport

The October 2010 issue of *Fleet Transport* magazine (“Fleet Transport,” Ex. 1006) was published in October 2010. Ex. 1006 at 1; Ex. 1002 ¶ 48. Fleet Transport is an authentic copy of portions of the October 2010 issue. *Id.* *Fleet*

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Transport is a well-respected magazine within the trucking industry that was at the relevant time reliably published and made accessible to the relevant public in the month indicated on the cover. *Id.* The cover of Fleet Transport includes commercial markings, including the date “Oct 2010,” and International Standard Serial Number (“ISSN”), and a price that includes a Value Added Tax (“V.A.T.”), that are reliable indicators that Fleet Transport was published and made accessible to the relevant public in October 2010. Ex. 1006 at 1. Accordingly, the preponderance of the evidence shows that Fleet Transport is prior art to the ’084 patent under at least post-AIA 35 U.S.C. § 102(a)(1) and the exceptions of post-AIA 35 U.S.C. § 102(b)(1) do not apply. Ex. 1002 ¶ 48.¹ Fleet Transport was not cited by the Examiner during prosecution. Ex. 1001 at 1-2.

¹ In *Ericsson, Inc. v. Intellectual Ventures I LLC*, IPR2014-00527, Paper 41 at 10-12 (P.T.A.B. May 18, 2015), the Board held that date indicia and commercial markings of a reputable journal established public accessibility under the preponderance-of-the-evidence standard. The evidence of public accessibility of the printed publication art (including Fleet Transport) presented in this Petition is at least as strong, and certainly more than sufficient to meet the reasonable-likelihood-of-prevailing standard for institution, especially given that the Petition relies solely on combinations of patents and patent publications which are indisputably prior art for 21 of the 26 challenged claims.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Fleet Transport graphically discloses a semi-truck with the frontmost side of its frontmost door adjacent to and behind the rearmost portion of the front wheel well, as shown below:



Ex. 1006 at 1.

5. Future Truck Report

A report entitled “Future Truck Committee Information Report: 2001-2,

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Innovation in Future Truck Cab Designs: An Exploration of New Possibilities” (“Future Truck Report,” Ex. 1007) was published in March 2001 by The Maintenance Council of the American Trucking Associations. Ex. 1002 ¶ 50. Significant evidence supports the conclusion that the Future Truck Report was published and accessible to the relevant public in March 2001. *Id.* The report is an authentic and official report of a council of the well-respected American Trucking Associations that was intended “to provoke discussion and encourage innovation.” *Id.* The report includes numerous findings and suggestions about truck design that would fulfill the organization’s purpose only if the report were published and accessible to the relevant public. *Id.* The report includes several indicia that the report was issued in March 2001, including the marking “Issued: March 2001” and a 2001 copyright notice, together with commercial markings showing that those date markings are reliable indicators of when the report was, in fact, issued and made accessible to the relevant members of the public. *Id.* Accordingly, the preponderance of the evidence shows that the Future Truck Report is prior art to the ’084 patent under at least post-AIA 35 U.S.C. § 102(a)(1) and the exceptions of post-AIA 35 U.S.C. § 102(b)(1) do not apply. *Id.* The Future Truck Report was not cited by the Examiner during prosecution. Ex. 1001 at 1-2.

The Future Truck Report discloses that the traditional position of semi-truck doors is ergonomically disadvantageous and unsafe, resulting in a relatively high

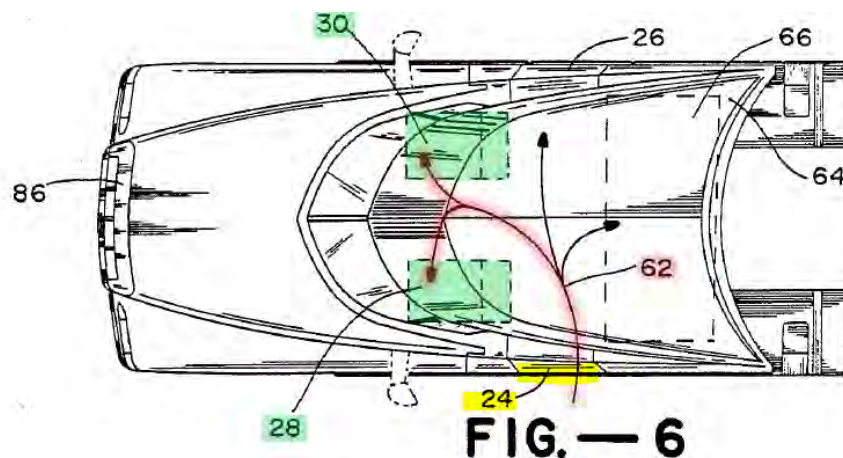
Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

level of driver injuries caused by slips. Ex. 1007 at 2-4. The Future Truck Report also suggested that positioning the door behind the seat to provide rear entry into the cabin would make entry into the vehicle easier and increase safety by reducing driver injuries caused by slips. *Id.*

6. Marlowe

U.S. Patent No. 4,932,716 to Marlowe (“Marlowe,” Ex. 1008) issued June 12, 1990. Ex. 1008, cover. Marlowe is prior art to the ’084 patent under at least post-AIA 35 U.S.C. § 102(a)(1) and the exceptions of post-AIA 35 U.S.C. § 102(b)(1) do not apply. Marlowe was submitted in an IDS but not cited by the Examiner. Ex. 1003 at 126; Ex. 1001 at 1-2.

Marlowe discloses a semi-truck with two seats, doors located behind the seats, a sleeper, and an entry path that provides access to both seats from in between the seats and to the sleeper:



Ex. 1008, Fig. 6 (annotated).

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

7. Eltra

PCT Application Publication No. WO 81/01587 to Eltra Corporation (“Eltra,” Ex. 1009) was published June 11, 1981. Ex. 1009, cover. Eltra is prior art to the ’084 patent under at least post-AIA 35 U.S.C. § 102(a)(1) and the exceptions of post-AIA 35 U.S.C. § 102(b)(1) do not apply. Eltra was not cited by the Examiner during prosecution. Ex. 1001 at 1-2.

Eltra discloses a three-track sliding door that includes components for opening and closing the door automatically upon initiation by an electrical switch. Ex. 1009 at 1:8-15; 4:12-25.

8. Racz

U.S. Patent Application Publication No. 2003/0006628 A1 to Racz (“Racz,” Ex. 1010) was published January 9, 2003. Ex. 1010, cover. Racz is prior art to the ’084 patent under at least post-AIA 35 U.S.C. § 102(a)(1) and the exceptions of post-AIA 35 U.S.C. § 102(b)(1) do not apply. Racz was not cited by the Examiner during prosecution. Ex. 1001 at 1-2.

Racz discloses a conventional hinged door on a semi-truck. Ex. 1010 ¶ [0014].

9. Kia

The 2013 Kia Sedona User Manual (Ex. 1011, “Kia”) was published at least by the end of 2013 because, as is well known, automobile user manuals are

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

publicly distributed to purchasers of automobiles as soon as the model is sold and are quickly thereafter available to non-purchasers. Ex. 1002 ¶ 58. In addition, Kia includes a copyright date of 2011, indicating that the manual may have been publicly accessible even before the release of the 2013 Kia Sedona (which, according to standard automobile industry practice, would have occurred in 2012). *Id.* Accordingly, a preponderance of the evidence shows that Kia is prior art to the '084 patent under at least post-AIA 35 U.S.C. § 102(a)(1) and the exceptions of post-AIA 35 U.S.C. § 102(b)(1) do not apply. *Id.* Kia was not cited by the Examiner during prosecution. Ex. 1001 at 1-2.

Kia discloses an “automatic stop and reversal” feature for a “power sliding door.” Ex. 1011 at 35. Kia explains that this feature will detect resistance to the power sliding door and stop or reverse the closing of the door. *Id.*

10. Plummer

U.S. Patent No. 7,145,788 to Plummer (“Plummer,” Ex. 1012) issued December 5, 2006. Ex. 1012, cover. Plummer is prior art to the '084 patent under at least post-AIA 35 U.S.C. § 102(a)(1) and the exceptions of post-AIA 35 U.S.C. § 102(b)(1) do not apply. Plummer was not cited by the Examiner during prosecution. Ex. 1001 at 1-2.

Plummer discloses a conventional sleeper unit 142 in a semi-truck:

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

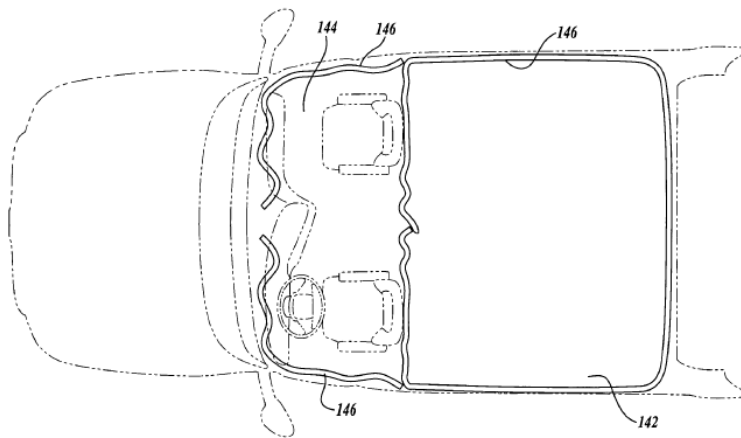


Fig. 5.

Ex. 1012, Fig. 5. Plummer also discloses that long-haul trucks are equipped with “hotel loads” that include “heating and air conditioning, lighting, and appliances such as refrigerators, coffee makers and microwave ovens.” *Id.* at 1:15-22.

11. Man Annual Report

The Man Annual Report (Ex. 1013) is an authentic and official annual report publicly filed by the Man Group in 2012. Ex. 1002 ¶ 62. The report includes indicia and commercial markings reliably indicating that the Man Group publicly filed the report, and, thus, that it was accessible to relevant members of the public, in 2012. *See, e.g.*, Ex. 1013 at 1 (“2012 Annual Report” marking and Man logo); Ex. 1002 ¶ 62. The requirement for public companies to file an annual report to comply with the securities laws also establishes that the report was publicly accessible in 2012. Ex. 1002 ¶ 62. Accordingly, the preponderance of the evidence shows that the Man Annual Report is prior art to the ’084 patent under at least post-AIA 35 U.S.C. § 102(a)(1) and the exceptions of post-AIA 35 U.S.C. §

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

102(b)(1) do not apply. *Id.* The Man Annual Report was not cited by the Examiner during prosecution. Ex. 1001 at 1-2.

The Man Annual Report discloses a semi-truck vehicle with a door taller than two people pictured near the truck:



Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Ex. 1013 at 8-9.

12. Freightliner

An article entitled “Ergonomics Program at Freightliner” by Josef Loczi (“Freightliner,” Ex. 1014), was published in *SAE Transactions* in 2000. Ex. 1002 ¶ 64. *SAE Transactions* is a well-respected journal of the Society of Automotive Engineers that is reliably published and made accessible to the relevant public near

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

the time indicated on each issue. *Id.* Freightliner, which is an authentic copy of the article, includes reliable indicia that the article was published in 2000 or 2001, including copyright notices and commercial markings indicating the reliability of the indicia. *Id.* Accordingly, the preponderance of the evidence shows that Freightliner is prior art to the '084 patent under at least post-AIA 35 U.S.C. § 102(a)(1) and the exceptions of post-AIA 35 U.S.C. § 102(b)(1) do not apply. *Id.* Freightliner was not cited by the Examiner during prosecution. Ex. 1001 at 1-2.

Freightliner discloses multiple steps and hand holds for assisting a driver to enter the cabin of a semi-truck:



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Ex. 1014, 14.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Ex. 1019, 5 (JSTOR image of same figure).

B. Ground 1: Claims 1-5, 15-16, and 25 would have been obvious over Modec and Messano

Claims 1-5, 15-16, and 25 would have been obvious over Modec and Messano, as explained below.

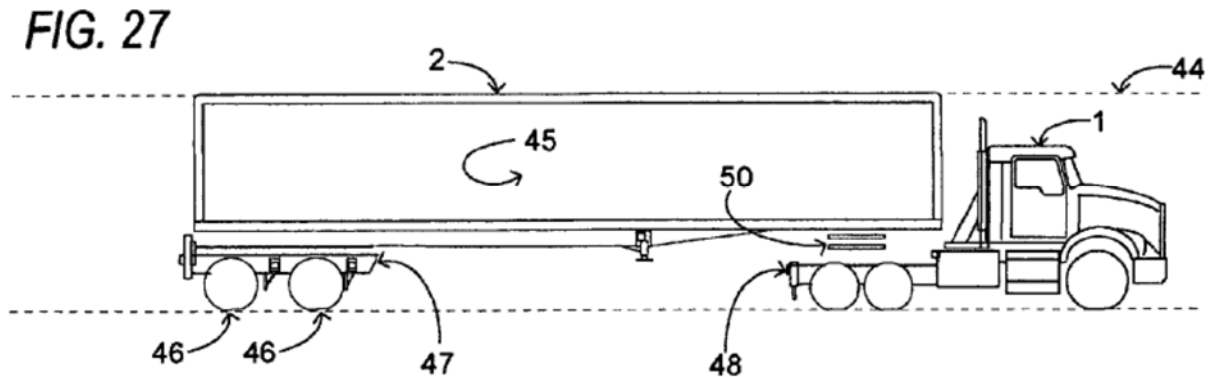
1. Claim 1

a. “A semi-truck vehicle”

Modec discloses an “electric vehicle 100” that can be a “specialist delivery vehicle” or “a box van or minibus or any other commercial or domestic use vehicle.” Ex. 1004 at 14:30-15:2. While Modec does not specifically mention a “semi-truck vehicle,” it would have been obvious to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle,” as explained below in Section IV(B)(1)(k).

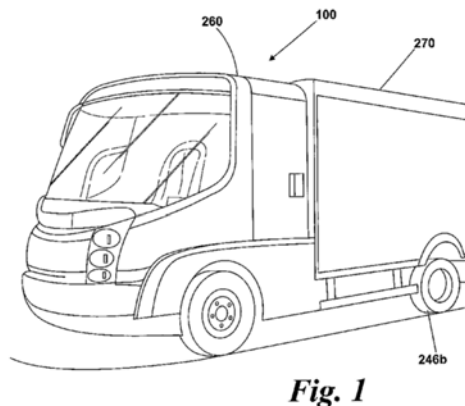
Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

In the same field, Messano discloses an electric vehicle that is a “semi-truck vehicle.” Ex. 1002 ¶ 68. Figure 27 of Messano, reproduced below, illustrates “a tractor truck and semi-trailer.” Ex. 1005 at 7:18-19.



b. “an electric drive train”

Modec discloses an “electric vehicle 100,” shown in Figure 1, reproduced below.



Ex. 1004 at 14:30; Fig. 1. Modec further discloses: “At [the electric vehicle’s] heart is an electric drive train including an electric motor 200 which is supplied with power from a battery assembly 210.” *Id.* at 15:2-4. Modec also discloses that the invention relates, in particular, “to electric vehicles and to control and security

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

systems that may be fitted to such vehicles,” and further explains that “electric powered vehicles . . . use electrical power sources and electric motors as the heart of their drive train.” *Id.* at 1:7-8, 17-18.

Messano also discloses an electric drive train. Ex. 1002 ¶ 70. Messano specifically discloses that “this present invention is for an electric vehicle which does not have a conventional driveline.” Ex. 1005 at 4:10-11. Messano further discloses “Road-Wheel Modules provide the motive system for the vehicle and vehicle trailers. A Road-Wheel Module consists of an electric drive motor.” *Id.* at 4:26-28. The presence of a combustion engine in at least one embodiment of Messano is irrelevant to the “electric drive train” limitation. Because that limitation refers to the drive train only, it does not require the absence of a combustion engine. In fact, dependent claim 3 of the ’084 patent expressly recites “wherein the semi-truck vehicle comprises a combustion engine,” thereby establishing that claim 1 may include a combustion engine in addition to “an electric drive train.”

c. “a body”

As would be understood by a POSITA, all vehicles have “a body.” Ex. 1002 ¶ 71. A POSITA would understand that Figure 1 of Modec, reproduced below, illustrates “a body.”

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

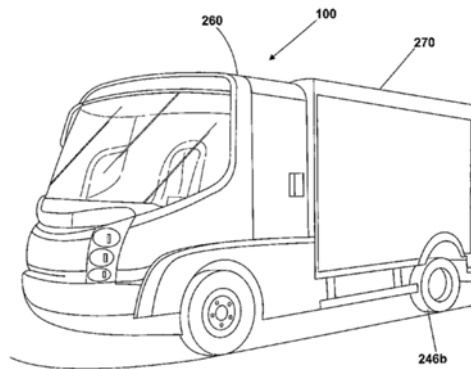


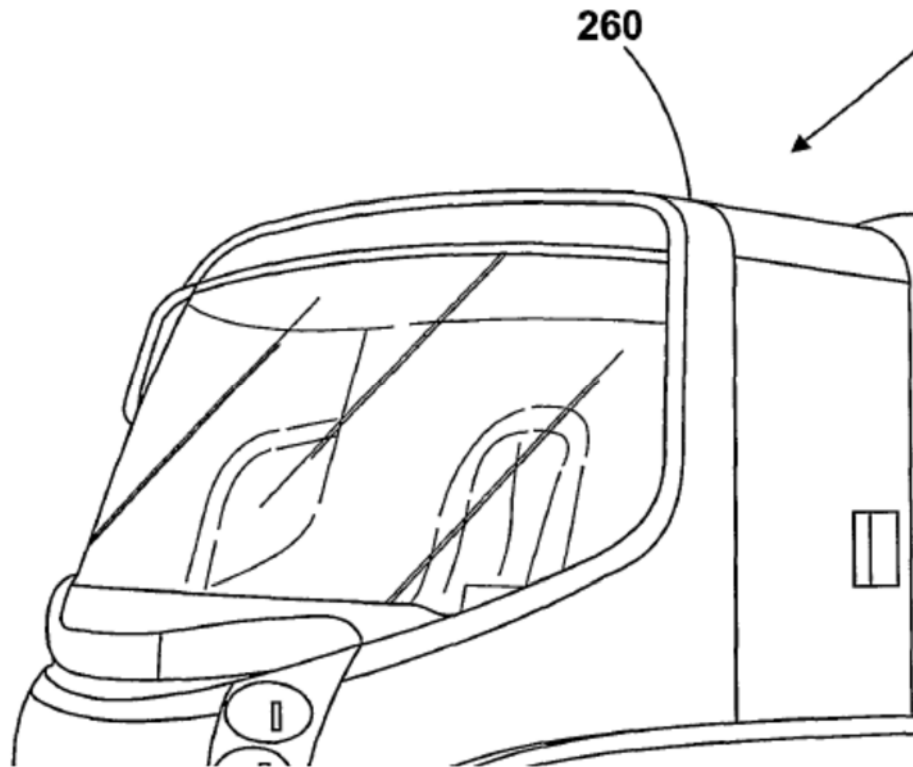
Fig. 1

Ex. 1004, Fig. 1; Ex. 1002 ¶ 71. Modec’s text also expressly discloses “a body.” For example, Modec discloses that electrical pins may “be grounded by connecting them to the *body or chassis* of the vehicle.” Ex. 1004 at 12:13-14 (emphasis added). Modec also discloses: “The vehicle in this example is a specialist delivery vehicle, but through a simple change to the *vehicle body* it could be” *Id.* at 14:30-15:1 (emphasis added).

- d. “a cabin located within the body of the semi-truck vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person”

Modec discloses: “At the front, the *chassis* carries a *cab* 260 in which the *driver sits* and which is protected by a lockable door. As shown the cab has a *driver* and *passenger seat* (not shown).” *Id.* at 15:29-31 (emphases added). As shown by the following blown-up portion, Figure 1 illustrates the cab 260:

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084



Id., Fig. 1. Modec further discloses that a cooling system “keeps the *cabin* at a comfortable ambient temperature.” *Id.* at 15:23-24 (emphasis added). A POSITA would understand that the terms “cab” and “cabin” are used interchangeably in the art and in Modec’s disclosure. Ex. 1002 ¶ 72.

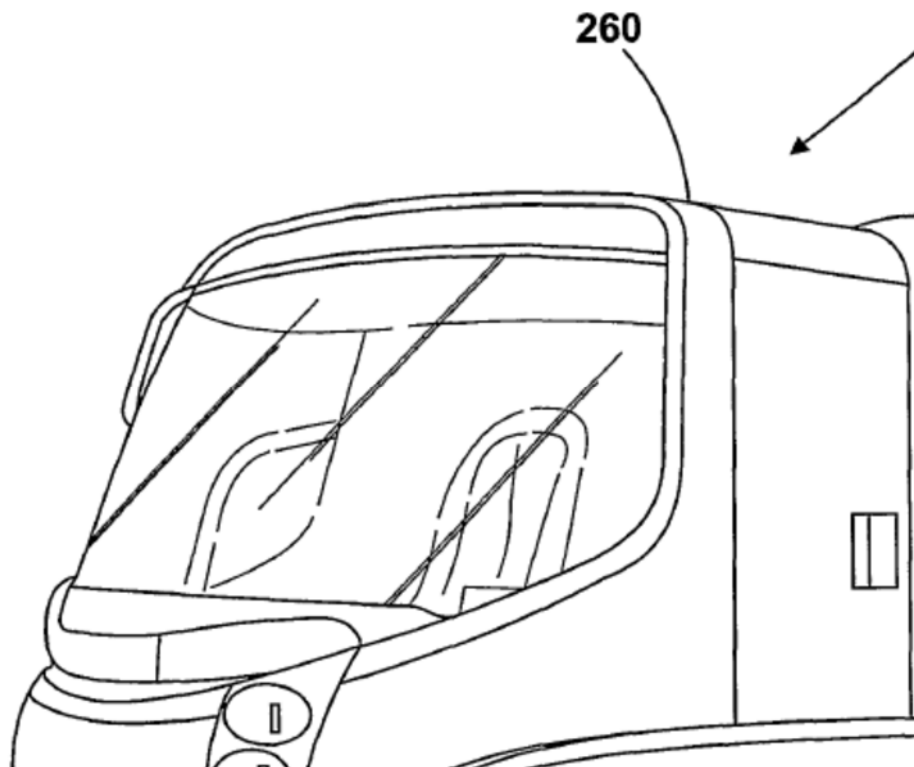
Figure 1 and the text of Modec establish that the cab 260 or cabin is “located within the body.” Further, Figure 1 and Modec’s disclosure that the driver sits in the cab and that the cab has a driver seat and a passenger seat establish that “the cabin comprises an interior that is configured to accommodate at least one person.” Ex. 1002 ¶ 73.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

As explained below in Section IV(B)(1)(k), it would have been obvious to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle.”

e. **“a seat located in the interior of the cabin that is configured for seating a user”**

Modec discloses: “At the front, the chassis carries a cab 260 in which the *driver sits* and which is protected by a lockable door. As shown the cab has a *driver* and *passenger seat* (not shown).” Ex. 1004 at 15:29-31 (emphases added). Figure 1 shows that the seats are “located in the interior of the cabin.”



Id., Fig. 1; Ex. 1002 ¶ 75. Further, a POSITA would understand that each of the disclosed driver seat and passenger seat is “configured for seating a user.” Ex.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

1002 at ¶ 75. In fact, Modec’s express disclosure that the “driver sits” establishes that the driver seat “is configured for seating a user.” *Id.*

f. **“a door comprising a width extending a horizontal length of the door, wherein the door provides ingress and egress to the interior of the cabin of the semi-truck vehicle”**

Modec discloses: “At the front, the chassis carries a cab 260 in which the driver sits and which is protected by a lockable *door*.” Ex. 1004 at 15:29-31 (emphasis added). The annotated blown-up portion of Figure 1, below, shows the disclosed door in yellow. Ex. 1002 ¶ 76.

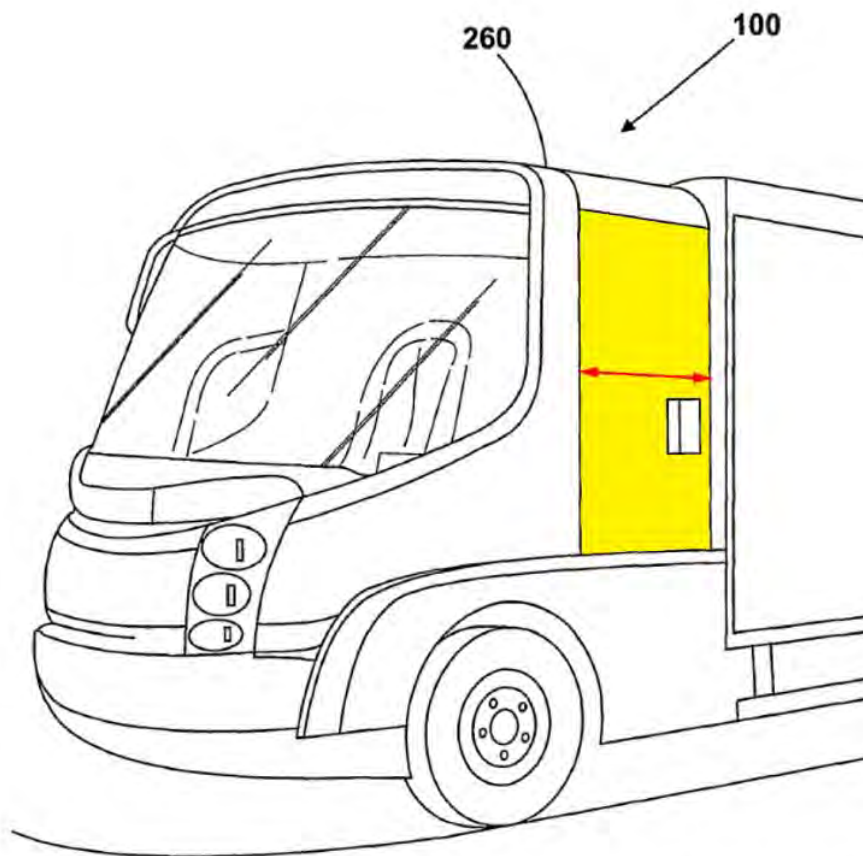


Fig. 1

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

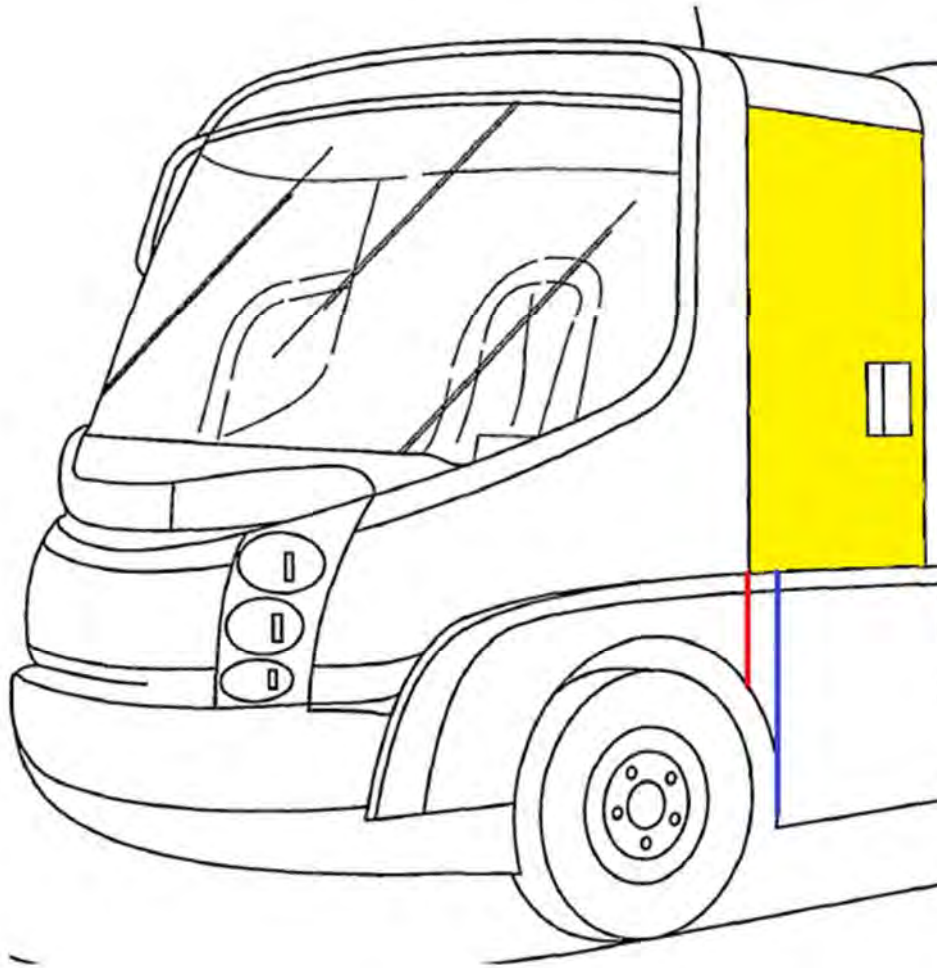
Id., Fig. 1. The red line on the annotated figure shows that the door comprises “a width extending a horizontal length of the door.” Ex. 1002 ¶ 76. Modec further discloses that the door can be unlocked “to allow the driver to access the vehicle through the door” (*id.* at 22:18-20), thereby establishing that “the door provides ingress and egress to the interior of the cabin.” *Id.*

As explained below in Section IV(B)(1)(k), it would have been obvious to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle.”

- g. **“wherein the door is located on the body such that the frontmost side of the door is adjacent to a rearmost portion of a front wheel well”**

The following annotated blown-up portion of Figure 1 of Modec shows that “the door [yellow] is located on the body such that the frontmost side of the door [red line extended from frontmost edge] is adjacent to a rearmost portion of a front wheel well [blue line extended from rearmost edge].” Ex. 1002 ¶ 78.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084



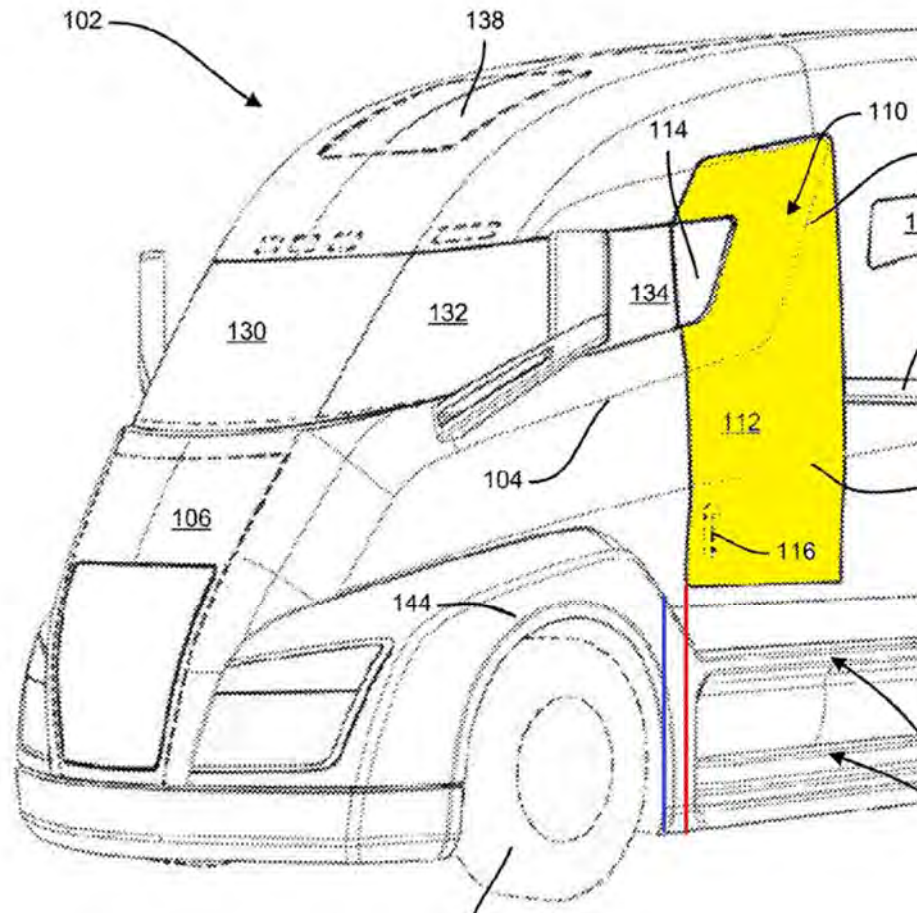
As explained above in Section II(A), “adjacent to” means “nearby but not touching.” The red and blue lines in the annotated figure above show a very small gap between the frontmost side of the door and the rearmost portion of the front wheel well in Modec, and, thus, those components are “nearby but not touching” or “adjacent to” each other. *Id.*

Indeed, the position of the door relative to the front wheel well in Modec is almost identical to the position of those same components in the '084 patent, as

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

shown by the following annotated blown-up portion of Figure 1 of the '084 patent.

Ex. 1002 ¶ 79



As explained above, the claim term “adjacent to” does not require the frontmost side of the door to be located horizontally behind the rearmost portion of the wheel well, or *vice-versa*. The “adjacent to” limitation is satisfied as long as those two components are “nearby but not touching,” without regard to whether the frontmost side of the door or the rearmost portion of the wheel well is in the forward-most horizontal position. Accordingly, it is irrelevant that Figure 1 of the '084 patent depicts the frontmost side of the door located horizontally behind the

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

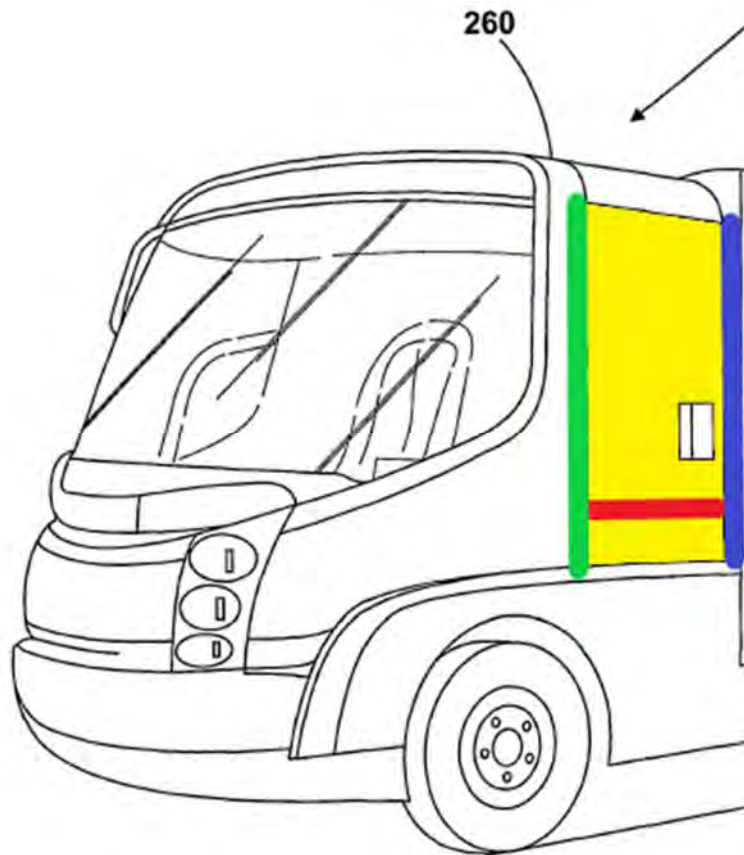
rearmost portion of the wheel well, while Figure 1 of Modec shows the frontmost side of the door located horizontally in front of the rearmost portion of the wheel well. *Id.*

Moreover, even if the “adjacent to” limitation required the frontmost side of the door to be located horizontally behind the rearmost portion of the wheel well, the relative horizontal positioning of those two components would have been a matter of obvious design choice. Ex. 1002 ¶ 80. A POSITA would understand that, as long as a sufficient portion of the door is located behind the wheel well to enable a person to enter the truck without climbing over the wheel well, there is no significant functional difference between locating the door entirely behind the wheel well and locating a small portion of the door slightly in front of the rearmost portion of the wheel well. *Id.* Accordingly, a POSITA would be motivated to locate the door entirely behind the wheel well when an elongated cabin is desired and to locate a portion of the door in front of the rearmost portion of the wheel well when a more condensed cabin is desired. *Id.* Because semi-trucks generally have relatively elongated cabins, it would have been an obvious design choice to move Modec’s door back slightly to locate the frontmost side of the door horizontally behind the rearmost portion of the wheel well. *Id.*

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

h. “and the width of the door is disposed between the frontmost side of the door and a rearmost side of the door”

The annotated blown-up portion of Figure 1, below, shows that “the width [red] of the door [yellow] is disposed between the frontmost side [green] of the door and the rearmost side [blue] of the door.”



Id., Fig. 1; Ex. 1002 ¶ 81.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

- i. “at least a portion of the door being positioned behind the seat and at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well such that the door opens to provide ingress and egress into the cabin from a backside of the seat”

The following annotated Figure 1 of Modec shows that “at least a portion of the door [yellow]” is “positioned behind the seat [green] and at least a portion of the seat [green] is disposed to be forward of a line defining the rearmost portion of the wheel well [blue line extended from rearmost edge].” Ex. 1002 ¶ 82.

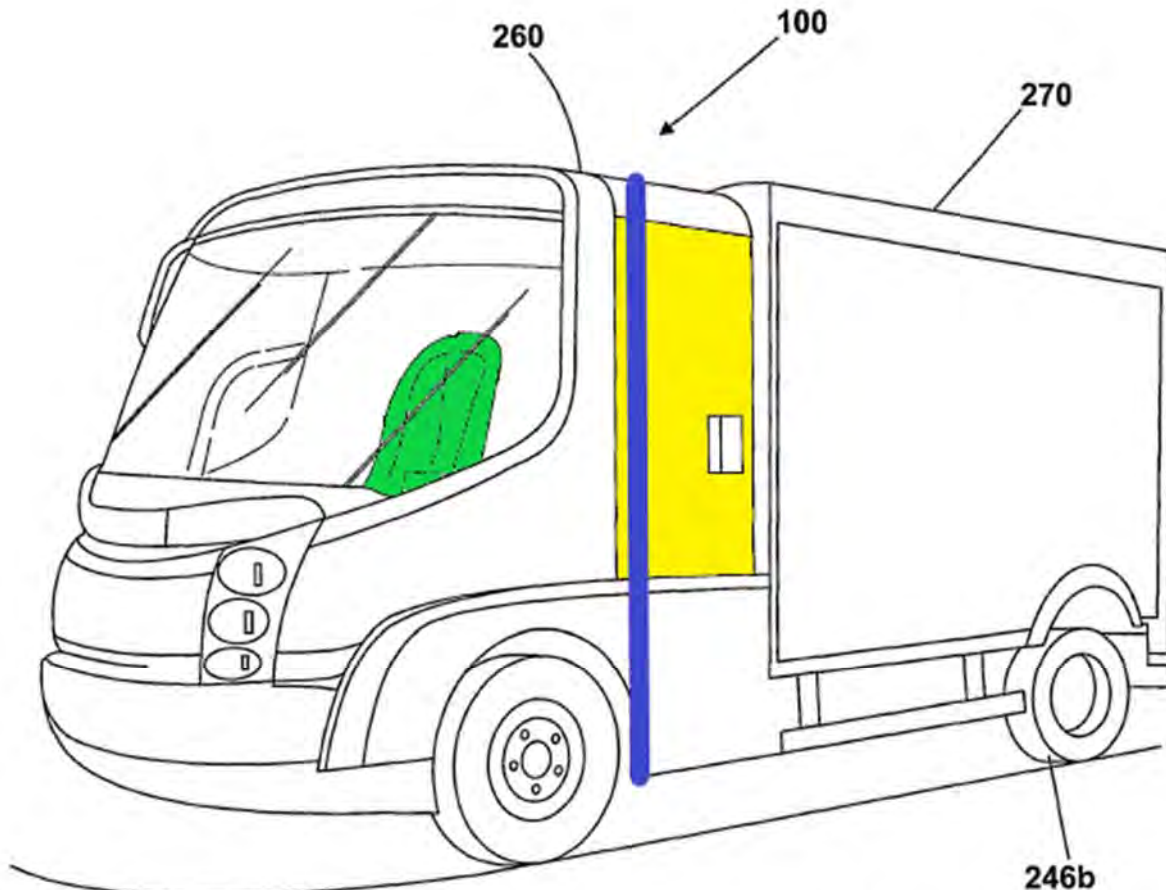


Fig. 1

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

Modec further discloses that the door can be unlocked “to allow the driver to access the vehicle through the door” (Ex. 1004 at 22:18-20), thereby establishing that “the door opens to provide ingress and egress into the cabin.” As explained above, the door is positioned behind the seat. Therefore, ingress and egress into the cabin, as provided by the door, can only be “from a backside of the seat.” Ex. 1002 ¶ 83.

j. **“wherein the door is the foremost door providing ingress or egress into the interior of the cabin.”**

The following annotated Figure 1 of Modec shows that “the door [yellow] is the foremost door.” Modec further discloses that the door can be unlocked “to allow the driver to access the vehicle through the door” (Ex. 1004 at 22:18-20), thereby establishing that the door is “providing ingress or egress into the interior of the cabin.” Ex. 1002 ¶ 84.

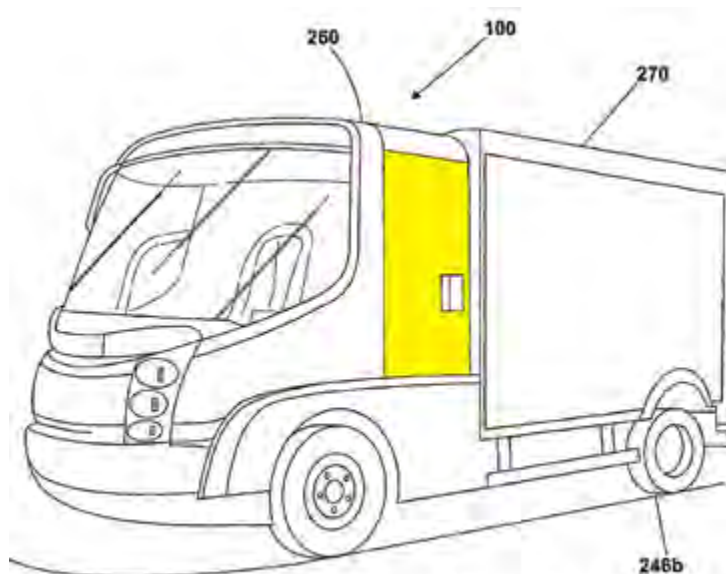


Fig. 1

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

- k. **A POSITA would have found it obvious, and would have been motivated, to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle.”**

As set forth above, claim 1 of the ’084 patent may differ from Modec because Modec does not expressly identify its “electric vehicle 100” as a “semi-truck vehicle.” This is not a patentable distinction, however, because a POSITA at the time of the alleged invention would have found it obvious to use Modec’s disclosed positioning of the door, seat, and front wheel well with a “semi-truck vehicle.” Ex. 1002 ¶ 85.

It would have been obvious to use Modec with a “semi-truck vehicle” in view of Modec alone. Figure 1 of Modec depicts “a specialist delivery vehicle.” *Id.* at 14:30-31. However, Modec discloses that “through a *simple change* to the vehicle body,” the vehicle could be a box van or minibus or *any other commercial* or domestic use *vehicle*.” *Id.* at 14:30-15:2 (emphases added). A POSITA would understand that a “semi-truck vehicle” is a “commercial vehicle,” and, thus, that “a simple change to the vehicle body” would adapt the configuration shown for Modec for use with a “semi-truck vehicle.” Ex. 1002 ¶ 86. Moreover, even if a POSITA did not consider a “semi-truck vehicle” to be the type of “commercial vehicle” contemplated by Modec, the express teaching that a simple change to the vehicle body would adapt Modec for use with other vehicle types would motivate a

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

POSITA to consider other vehicle types, even beyond those expressly disclosed, with which Modec’s relative positioning of the door, seat, and front wheel well could be used advantageously. *Id.*

Further, even if it were not obvious to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle” in view of Modec alone, it would have been obvious to do so in view of Modec in combination with Messano. Modec expressly discloses that “a simple change to the vehicle body” would adapt Modec for use with other vehicle types. Within the same field of electric vehicles, Messano expressly discloses that an electric drive train can be used with a wide variety of vehicles, including “heavy-duty long-haul vehicles” and “medium and light duty vehicles (trucks, buses, vans, SUVs, recreational vehicles, and the like).” *Id.*, Abstract. Those disclosures would motivate a POSITA to consider “semi-truck vehicles” to be among vehicle types with which Modec’s relative positioning of the door, seat, and front wheel well could be used advantageously. Ex. 1002 ¶ 87.

A POSITA would also be motivated by the understanding that Modec’s relative positioning would be advantageous for a “semi-truck vehicle” because it would allow a driver to more easily and safely enter and exit the “semi-truck vehicle.” Ex. 1002 ¶ 88. The POSITA would be well aware of this advantage for at least three reasons. First, a POSITA would have personal knowledge, based on

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

experience using or testing the different door, seat, and wheel well positions in the prior art, that it is easier and requires less dangerous movement to enter the cabin of a vehicle in which the relative positioning of the door, seat, and front wheel well allows for entry into the cabin from behind the seat rather than requiring climbing directly into the seat. Second, a POSITA would be aware of the express teaching of the 2001 American Trucking Associations report that positioning the door behind the seat to provide rear entry into the cabin would make entry into the vehicle easier and increase safety by reducing driver injuries caused by slips. Ex. 1007 at 2-4. Third, a POSITA would be aware of the general knowledge within the industry, as shown by Applicants' admission in the background section of the '084 patent, that climbing directly into a semi-truck seat, as required by the traditional positioning of the door, seat, and front wheel well, may be uncomfortable and dangerous. Ex. 1002 ¶ 88.

A POSITA would be even more motivated to use the relative positioning of the door, seat, and front wheel well disclosed by Modec for a "semi-truck vehicle" than for smaller vehicles like delivery trucks or vans. The reason for this enhanced motivation is that the advantages of increased comfort and safety are even more significant for larger vehicles such as "semi-trucks" because the need to climb directly up into the seat is more of an inconvenience and danger for a larger vehicle than for a smaller vehicle. Ex. 1002 ¶ 89.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Finally, a POSITA would have an expectation of success in modifying Modec for use with a “semi-truck vehicle.” Ex. 1002 ¶ 90. A POSITA would understand that Modec’s relative positioning of the door, seat, and front wheel well is a simple layout choice that could easily be implemented for any type of vehicle regardless of size or other physical differences. *Id.* A POSITA would further understand that nothing beyond mere resizing of the various cabin components would be necessary to modify Modec for use with “a semi-truck vehicle” and that there would be no technical or other obstacles to making that modification. *Id.*

In summary, modifying Modec to use its disclosed relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle” would meet every claim limitation, a POSITA would have had a motivation or reason to make the modification, and a POSITA would have expected success and not encountered any technical or other obstacle to making the combination. Therefore, it would have been obvious to modify Modec for use with a “semi-truck vehicle.” Because such modification would include every claim limitation, claim 1 would have been obvious. Ex. 1002 ¶ 91.

2. Claim 2: “wherein the semi-truck vehicle is an electric vehicle comprising a battery pack that is coupled to an electric drive train.”

Modec discloses: “At [the electric vehicle’s] heart is an electric drive train including an electric motor 200 which is supplied with power from a battery

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

assembly 210.” Ex. 1004 at 15:2-4. Modec also discloses that: “The battery assembly 210 comprises a self contained unit that comprises 10 battery cells, battery control circuitry for regulating the battery charge and voltage, and a set of contactors which selectively connect the batteries to the units output terminals or isolate them.” A POSITA would understand that a “battery assembly” is a “battery pack,” and, thus, Modec discloses “an electric vehicle comprising a battery pack that is coupled to an electric drive train.” Ex. 1002 ¶ 92.

Further, it would have been obvious to a POSITA to couple the electric drive train of Claim 1 to a battery pack in view of Modec in combination with Messano. Messano discloses a “Battery Module” which “may consist of batteries, capacitors, or any combination thereof where electrical energy is stored.” Ex. 1005 at 4:16-19. Messano discloses that the truck’s “electric motors receive power from the Battery Modules and optionally from the GenSets.” *Id.* at 4:33-35. A POSITA would understand that the “Battery Modules” disclosed by Messano are “a battery pack that is coupled to an electric drive train.” Ex. 1002 ¶ 93.

Moreover, it would have been obvious to a POSITA to couple the electric drive train of Claim 1 to a battery pack in order to provide power to the electric drive train. Ex. 1002 ¶ 94.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

3. **Claims 3 and 25: “wherein the semi-truck vehicle comprises a combustion engine configured to generate power by using combustion energy of fuel” and “wherein the semi-truck vehicle is a hybrid vehicle comprising electrical and combustion components.”**

As explained above, claim 1 would have been obvious over Modec and Messano. In addition, Messano specifically claims “A hybrid semi-trailer truck system comprising: an electric drive road tractor that incorporates: a multiplicity of constant-speed internal combustion engines maximized for fuel efficiency.” Ex. 1005 at 19:28-31. Thus, Messano discloses both “a combustion engine configured to generate power by using combustion energy of fuel” (claim 3) and “a hybrid vehicle comprising electrical and combustion components” (claim 25). Therefore, claims 3 and 25 would have been obvious over Modec and Messano. Ex. 1002 ¶ 95.

4. **Claim 4: “wherein the semitruck vehicle comprises only a single door.”**

The following annotated Figure 1 of Modec shows only a single door (yellow). Ex. 1002 ¶ 96.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

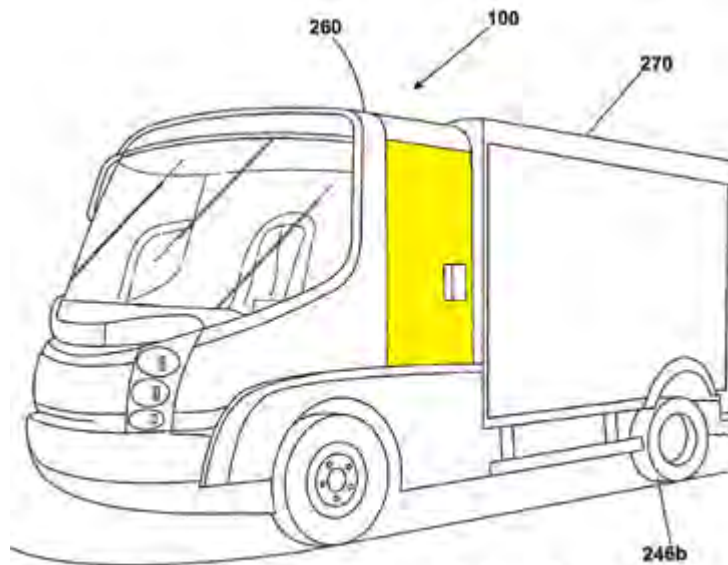


Fig. 1

Modec does not disclose the presence of additional doors. Thus, Modec discloses “only a single door.” Ex. 1002 ¶ 97.

5. Claim 5: “wherein the single door is located on a left side when the user is seated in the seat of the semi-truck vehicle.”

As shown in the previous figure, Modec shows “a single door” (yellow) that is located on the left side of the truck when the user is seated in the seat. Ex. 1002 ¶ 98.

6. Claim 15: “wherein the vehicle is an electric driven class 7 semi-truck.”

As explained above, Messano discloses a “semi-truck vehicle” with an electric drive train. Messano further discloses that “[t]he drive system equally applies to light & medium duty Class 2 to 7 vehicles, motorhomes, amphibians, and automobiles.” Ex. 1005 at 1:41-43. Thus, Messano discloses a semi-truck

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

vehicle “wherein the vehicle is an electric driven class 7 semi-truck.” Ex. 1002 ¶ 99.

7. **Claim 16: “wherein the vehicle is an electric driven class 8 semi-truck.”**

As explained above, Messano discloses a “semi-truck vehicle” with an electric drive train. Messano further discloses that “[t]he present invention relates [...] more particularly, to a fuel efficient heavy-duty Class 8 long-haul vehicle.” Ex. 1005 at 1:33-36. Thus, Messano discloses a semi-truck vehicle “wherein the vehicle is an electric driven class 8 semi-truck.” Ex. 1002 ¶ 100.

C. Ground 2: Claim 6 would have been obvious over Modec, Messano, and the Future Truck Report

Claim 6, which depends from claim 4 and recites the additional limitation “wherein the single door is located on the right side when the user is seated in the seat of the semi-truck vehicle,” would have been obvious over Modec, Messano, and the Future Truck Report. While Modec illustrates “a single door” (yellow in annotated Figure 1, shown previously) “located on the left side of the truck,” it would have been obvious to a POSITA to instead locate the door on the right side. The Future Truck Report discloses a “single door located on the right side when the user is seated in the seat of the semi-truck vehicle,” and it would have been obvious to combine Modec and Messano with the Future Truck Report. The Future Truck Report discloses that, “[e]ntry could be by a door at the right rear of

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

the passenger side, eliminating the door on the driver’s side” and explains that this position “would eliminate the need for retractable steps/stairs and for doors opening into traffic. For on-highway use there is little need for a driver to have ready entry and exit provided by a door on his immediate left.” Ex. 1007 at 3. The Future Truck Report also explains that a door weakens the cab structure and restricts the cab window size. *Id.* A POSITA would know to combine Modec and Messano with the Future Truck Report because the Future Truck Report explicitly suggests designers consider making the disclosed changes to conventional truck designs. Ex. 1002 ¶ 101-102. For example, the Future Truck Report states that, “[t]he authors ... advocate spirited debate and serious consideration of the value of these changes to cab design.” Ex. 1007 at 1.

D. Ground 3: Claims 7, 8, 21, and 26 would have been obvious over Modec, Messano, and Marlowe

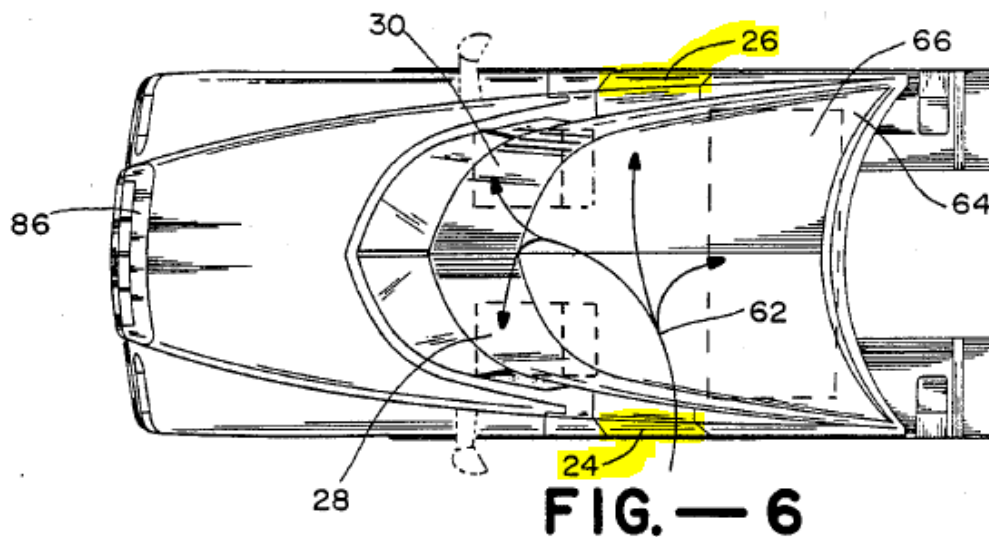
1. Claim 7: “wherein the door of the semi-truck vehicle comprises a first door and a second door.”

It would have been obvious to a POSITA to modify the cabin of Modec to have a first door and a second door. In fact, it is customary for semi-truck vehicles and other trucks to have at least two doors, a driver-side door and a passenger-side door. A POSITA would recognize that it is advantageous to have at least two doors for convenience, to provide separate entryways for the driver and the

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

passenger, and for safety, to provide multiple points of ingress and egress in case of an emergency. Ex. 1002 ¶ 103.

Even if this limitation were not obvious in view of Modec and Messano alone, it would have been obvious in view of Modec, Messano, and Marlowe. Marlowe discloses a “class 7 or 8 truck,” that includes a cab having driver and passenger doors.” Ex. 1008 at 1:6-10. A POSITA would understand that a class 8 truck is “a semi-truck vehicle.” Marlowe thus expressly discloses a “semi-truck vehicle [comprising] a first door and a second door,” as shown by Figure 6 from Marlowe, reproduced below, which shows “opposite driver and passenger doors **24** and **26**, respectively.” Ex. 1008 at 3:1-2; Figure 6; Ex. 1002 ¶ 104.



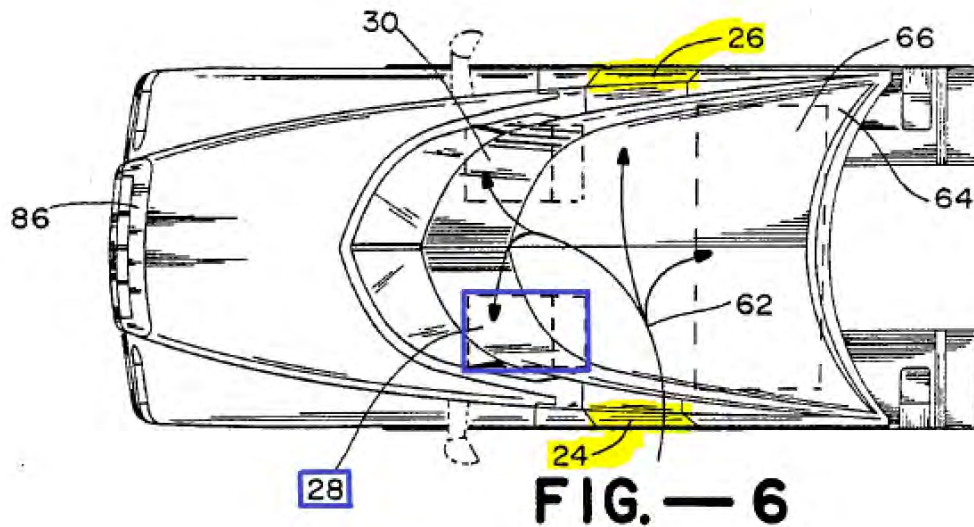
Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

2. **Claim 8: “wherein the first door is located on a left side when the user is seated in the seat of the semi-truck vehicle and the second door is located on a right side when the user is seated in the seat of the semi-truck vehicle.”**

It would have been obvious to a POSITA to modify the cabin of Modec to have a first door on the left side and a second door on the right side. Indeed, a POSITA would recognize that as the customary cabin design for a semi-truck vehicle or other truck. A POSITA would further recognize that it is advantageous to provide separate entryways for the driver and the passenger and to provide multiple points of ingress and egress. Ex. 1002 ¶ 105.

Even if this limitation were not obvious in view of Modec and Messano alone, it would have been obvious in view of Modec, Messano, and Marlowe. Marlowe discloses a “class 7 or 8 truck,” that includes a cab having driver and passenger doors.” Ex. 1008 at 1:6-10. A POSITA would understand that a class 8 truck is “a semi-truck vehicle.” Figure 6 from Marlowe, reproduced below, shows “opposite driver and passenger doors **24** and **26** [in yellow], respectively.” Ex. 1008 at 3:1-2; Figure 6. Figure 6 also shows “driver and passenger seats **28** [passenger seat outlined in blue] and **30**, respectively.” *Id.* at 3:2-3.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084



A POSITA would understand that the driver seat is where “the user is seated in the seat of the semi-truck vehicle.” As shown in Figure 6, the doors are to the left and right of the driver seat. Thus, Marlowe explicitly discloses the limitation of claim 8. Ex. 1002 ¶ 106.

3. Claim 21

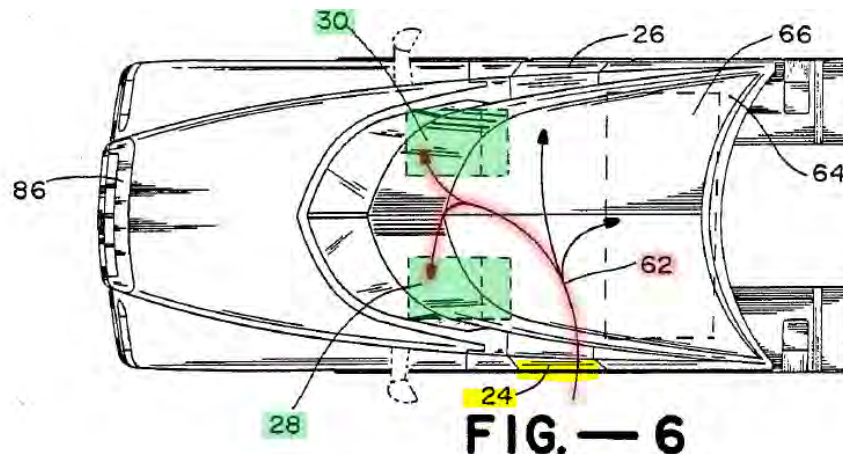
a. “wherein the cabin comprises a first seat and a second seat, and”

This limitation is identical in scope or nominally broader than the limitation of claim 1 discussed above in Section IV(D)(4)(e). Modec discloses this limitation for the same reasons set forth in Section IV(D)(4)(e), below. Ex. 1002 ¶¶ 107, 114.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

b. “wherein access to either of the first seat or the second seat is provided between the second seat and the first seat.”

It would have been obvious to a POSITA to modify the cabin of Modec and Messano to comprise a first seat and a second seat, wherein access to either of the first seat or the second seat is provided between the second seat and the first seat, as disclosed in Marlowe. Figure 6 of Marlowe, reproduced below, shows “driver and passenger seats 28 and 30 [green], respectively.” Ex. 1008 at 3:2-3.



Ex. 1008, Fig. 6. Figure 6 shows “driver and passenger doors 24 [yellow] and 26 are located rearwardly of driver and passenger seats 28 and 30 [green] so as not to obstruct access into and out of the cab, as depicted by arrow 62 [red].” *Id.* at 5:35-40. Arrow 62 clearly shows that entry into the cabin through the door (24) provides access to the seats from between the seats. *Id.*, Fig. 6. Thus, Marlowe explicitly discloses this claim limitation. A POSITA would be motivated to incorporate Marlowe’s design into Modec because providing a single, central aisle

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

for accessing both seats is more space efficient than providing two separate pathways. Ex. 1002 ¶ 108-109.

4. Claim 26

a. “A semi-truck vehicle”

This limitation is identical to the limitation of claim 1 discussed above in Sections IV(B)(1)(a) and IV(B)(1)(k). This limitation would have been obvious for the same reasons set forth above. Ex. 1002 ¶ 110.

b. “an electric drive train”

This limitation is identical to the limitation of claim 1 discussed above in Section IV(B)(1)(b). Modec and Messano each disclose this limitation for the same reasons set forth above. Ex. 1002 ¶ 111.

c. “a body”

This limitation is identical to the limitation of claim 1 discussed above in Section IV(B)(1)(c). Modec discloses this limitation for the same reasons set forth above. Ex. 1002 ¶ 112.

d. “a cabin located within the body of the vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person”

This limitation is identical to the limitation of claim 1 discussed above in Section IV(B)(1)(d). Modec discloses this limitation for the same reasons set forth above. Ex. 1002 ¶ 113.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

e. **“a first seat and a second seat located in the interior of the cabin”**

For the reasons set forth above in Section IV(B)(1)(e), Modec discloses the following limitation of claim 1: “a seat located in the interior of the cabin that is configured for seating a user.” Accordingly, Modec discloses the “first seat” of the comparable limitation of claim 26. The comparable limitation of claim 26 also requires “a second seat” in addition to the “first seat.” Modec discloses both “a driver and a passenger seat (not shown).” Ex. 1004 at 15:30-31. The “passenger seat” of Modec is the “second seat” required by claim 26. Ex. 1002 ¶ 114.

f. **“a door that provides ingress and egress to the interior of the cabin”**

This limitation is identical in scope or nominally broader than the limitation of claim 1 discussed above in Section IV(B)(1)(f).² Modec discloses this limitation for the same reasons set forth above. Ex. 1002 ¶ 115.

² The limitation of claim 1 recites that the door comprises “a width extending a horizontal length of the door” and that the cabin is “of the semi-truck vehicle.” Petitioner does not believe the claim 1 limitation differs substantively in scope.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

- g. **“the door being located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well”**

This limitation is identical to the limitation of claim 1 discussed above in Section IV(B)(1)(g). Modec discloses or renders obvious this limitation for the same reasons set forth above. Ex. 1002 ¶ 116.

- h. **“and at least a portion of the door being positioned behind the first seat, at least a portion of the first seat is disposed to be forward of a line defining the rearmost portion of the front wheel well”**

This limitation is essentially identical to the limitation of claim 1 discussed above in Section IV(B)(1)(h), except the limitation of claim 1 recites “the seat” instead of “the first seat” and includes the additional language “such that the door opens to provide ingress and egress into the cabin from the backside of the seat.” For the same reasons set forth above, Modec discloses this similar limitation of claim 26, with Modec’s driver seat being the “first seat” required by claim 26. Ex. 1002 ¶ 117.

- i. **an entryway provided between the first seat and the second seat, wherein the entryway comprises a vertical height extending from a floor of the cabin to at least a top of the first seat or the second seat;**

While Modec does not use the express terms “floor” or “entryway,” a POSITA would read Modec as implicitly disclosing the claimed “entryway” of claim 26. The annotated Figure 1 of Modec shown below illustrates why a

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

POSITA would read Modec to include that implicit disclosure.

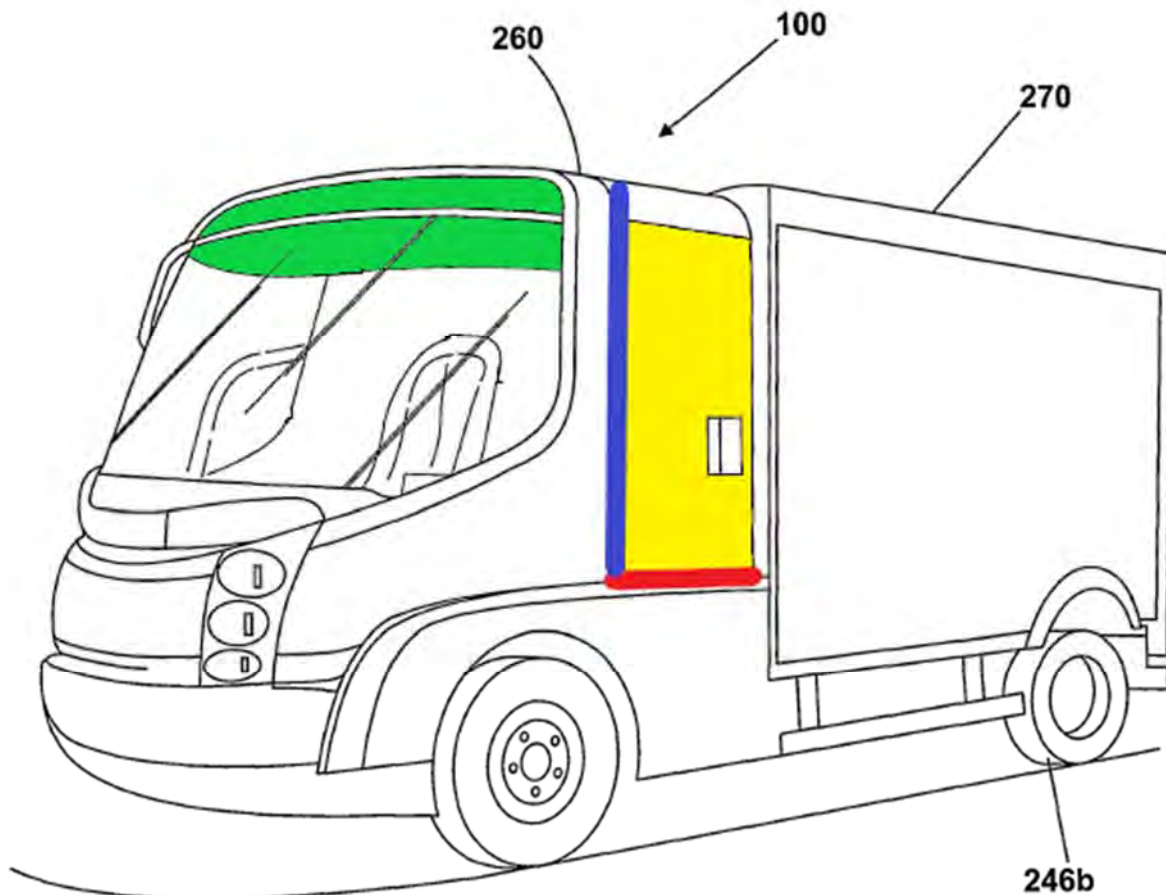


Fig. 1

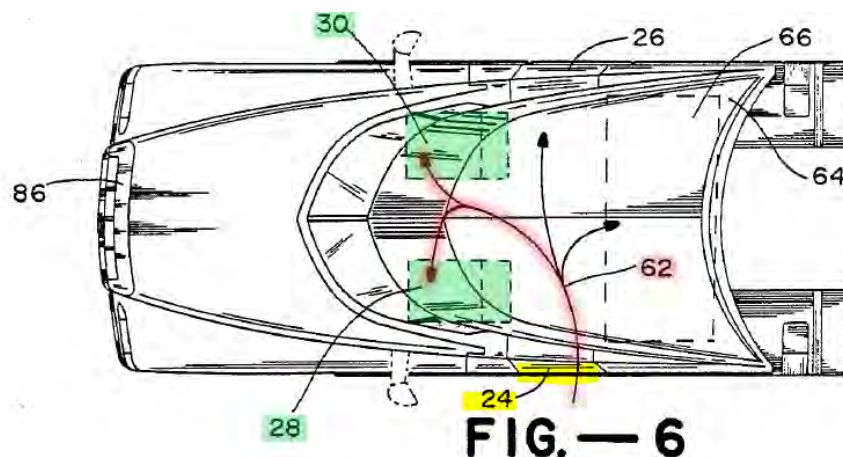
As shown, Modec graphically discloses a ceiling (green) of the cabin that is above the seat and the space behind the seat. A POSITA would understand that the door (yellow) must open up to reveal a floor on the other side of the door, at about the level of the lower edge (red) of the door, to prevent the driver from falling through to the undercarriage of the vehicle. Because the door is at least partially behind the seat, a POSITA would also understand that there is an entryway behind and between the two seats that extends vertically from the floor (red) to the ceiling

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

(green) of the cabin, which, as shown, is above the seat. Therefore, Modec implicitly discloses “an entryway provided between the first seat and the second seat wherein the entryway comprises a vertical height extending from a floor of the cabin to at least a top of the first seat or the second seat.” Ex. 1002 ¶ 118. Even if Modec does not implicitly disclose that limitation, it would have been obvious, in view of Modec’s disclosure of a door located behind the driver seat, to provide the claimed entryway as the most convenient and easiest pathway for the driver to get from the door to the driver seat upon entering the cabin. Ex. 1002 ¶ 119.

j. “wherein the entryway provides access to either of the first seat or the second seat.”

To the extent Modec does not expressly disclose that the “entryway provides access to either of the first seat or the second seat,” it would have been obvious in view of Marlowe to provide such access. As explained above with respect to claim 21, Marlowe discloses a pathway from the door to either one of the first seat or the second seat:



Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

Ex. 1008, Fig. 6. A POSITA would be motivated to incorporate Marlowe’s design into Modec because providing a single, central aisle for accessing both seats is more space efficient than providing two separate pathways. Ex. 1002 ¶ 120.

- k. **It would have been obvious, and a POSITA would have a motivation, to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle.”**

As set forth above, claim 26 of the ’084 patent may differ from Modec because Modec does not expressly identify its “electric vehicle 100” as a “semi-truck vehicle.” This is not a patentable distinction, however. For the same reasons set forth above in Section IV(B)(1) with respect to claim 1, a POSITA at the time of the alleged invention would have found it obvious, and would have been motivated, to use Modec’s disclosed positioning of the door, seat, and front wheel well with a “semi-truck vehicle.” Therefore, claim 26 of the ’084 patent is unpatentable. Ex. 1002 ¶ 121.

E. Ground 4: Claims 9-11 would have been obvious over Modec, Messano, and Eltra

1. **Claim 9: “wherein the door slides on an upper track, a mid-track, and a lower track located externally on the body of the semi-truck vehicle to open and close the door.”**

It would have been obvious to a POSITA to modify the cabin of Modec and Messano to use a sliding door, as disclosed in Eltra, that “slides on an upper track, a mid-track, and a lower track located externally on the body of the semi-truck vehicle to open and close the door.” Eltra discloses “sliding doors provided on the

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

passenger side of conventional motor vehicles.” Exhibit 1009 at 1:4-5. Eltra discloses that, “[s]uch a [sliding] door is supported at three points, two support points having fixed arms which ride in tracks provided in the vehicle body. [...] The third support points involves a spring loaded pivotally mounted arm riding in a track on the vehicle body disposed on the exterior of the vehicle, either at the top or center of the vehicle side.” *Id.* at 1:8-15. Thus, Eltra discloses the three-track sliding door of claim 9. Ex. 1002 ¶ 122.

A POSITA would have been motivated to use Eltra’s three-track sliding door of Eltra with the cabin of Modec and Messano. As Eltra discloses, sliding doors were a well-known alternative to hinged doors for large vehicles before the time of the invention. A POSITA would have understood that sliding doors are advantageous for semi-truck vehicles and other large vehicles because they provide a relatively easy and safe mechanism for opening the door and providing easy access to the interior of the vehicle. The POSITA would have also recognized that the three-track sliding door design of Eltra is advantageous to properly secure the door to the vehicle at multiple attachment points while preventing damage to both the door and the tracks. Ex. 1002 ¶ 123.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

2. **Claim 10: “wherein the door moves outward with respect to the body and backward with respect to the seat as the door is moved to an open position.”**

As explained above with respect to claim 9, it would have been obvious to use the sliding door disclosed in Eltra with the Modec and Messano cabin. Claim 10 depends from claim 9 and recites merely well-known functionality of conventional sliding doors for vehicles. Indeed, as a POSITA would have recognized, almost all conventional sliding doors in vehicles “move[] outward with respect to the body and backward with respect to the seat as the door is moved to an open position.” Ex. 1002 ¶ 124.

Eltra expressly discloses the well-known functionality of conventional sliding doors for vehicles. Specifically, Eltra discloses:

When the door is being opened, the rear edge of the door is moved outwardly [...]. Then, as the door is moved rearwardly, the door slides to the rear at an angle [...].”

Ex. 1009 at 1:21-26. A POSITA would have been motivated to use this well-known and conventional functionality because it was time-tested and known to work reliably. Accordingly, it would have been obvious to modify Modec and Messano to use a sliding door according to claim 9 “wherein the door moves outward with respect to the body and backward with respect to the seat as the door is moved to an open position.” Ex. 1002 ¶ 125.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

3. **Claim 11: “wherein an activation signal turns on a drive motor to pull the door open and closed.”**

As explained above, claim 10 would have been obvious in view of Modec, Messano, and Eltra. Claim 11 merely adds a conventional automatic sliding-door variation in which “an activation signal turns on a drive motor to pull the door open and closed.” Eltra expressly discloses this well-known and conventional variation of vehicle sliding doors:

An electrical switch disposed at any convenient point is used to open and close the door. When the electrical switch is operated to open the door, the cable which is terminated at the lever attached to the conventional operating mechanism is wound onto a winch, first unlatching then opening the door. An electrical switch, integral with the winch assembly, turns the winch motor off when the door reaches a predetermined position near the full open position. When the electrical switch is actuated to close the door, the cable which is guided around the edge of the door frame, and attached to the rear edge of the door, is wound onto a winch drum, pulling the door towards its closed position.

Ex. 1009 at 4:12-25. A POSITA would understand that this disclosure describes the use of a drive motor to pull the sliding door open and closed. Thus Eltra discloses a door “wherein an activation signal turns on a drive motor to pull the door open and closed.” Ex. 1002 ¶ 126.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

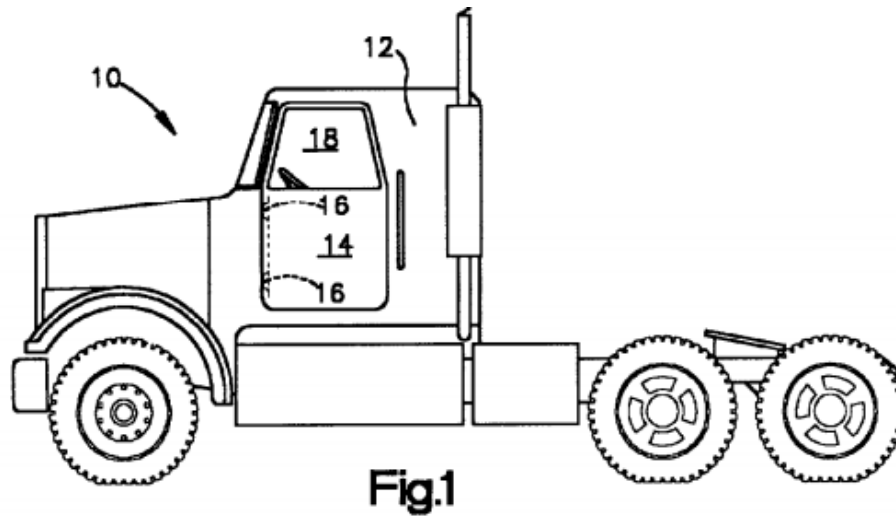
A POSITA would be motivated to use Eltra’s motor-driven automatic sliding door with Modec and Messano. Specifically, a POSITA would have known that the conventional motor-driven automatic sliding door disclosed by Eltra would be more convenient, easier to use, and safer than a manual sliding door. These advantages would be particularly compelling for the heavy doors needed for a commercial vehicle or semi-truck vehicle disclosed by Modec and Messano. Ex. 1002 ¶ 127.

F. Ground 5: Claim 12 would have been obvious over Modec, Messano, and Racz

Claim 12 depends from claim 1 and adds nothing more than “the door is hinged at one end and attached to the body of the semi-truck vehicle to open and close the door.” There is literally nothing more well-known or conventional than a hinged vehicle door. A POSITA would find claim 12 self-evidently obvious over Modec and Messano. Ex. 1002 ¶ 128.

Further, Racz expressly discloses a semi-truck vehicle with the claimed hinged door. Racz discloses “an over the highway tractor” which “includes the usual cab **12** which is fitted with an access door **14**” wherein “the door is mounted by a pair of hinges **16**.” Exhibit 1010 ¶ [0014]. Figure 1 of Racz is reproduced below.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084



A POSITA would be motivated to use the conventional hinged door of Racz with the cabin of Modec and Messano because conventional hinges were time-tested and known to be reliable mechanisms for attaching doors to vehicles and allowing the doors to be opened. Ex. 1002 ¶ 129.

G. Ground 6: Claim 13 would have been obvious over Modec, Messano, and Kia

As explained above, claim 1 would have been obvious over Modec and Messano. Claim 13 adds the limitation “wherein the door comprises a peak load sensor configured to sense a threshold, such that when a load on the door is higher than a threshold a control unit reverses the direction of the door and keeps the door from closing.” Ex. 1001, claim 13. The added limitation would have been obvious to a POSITA in view of Kia. Ex. 1002 ¶ 130.

Kia discloses an “automatic stop and reversal” feature for a “power sliding door.” Ex. 1011 at 35. Kia states:

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

If the power opening or closing is blocked by an object or part of the body, *the power sliding door* and power tailgate *will detect the resistance*, then the chime will sound 3 times, and stop movement or move to the full open position to allow the object to be cleared.

However, *if the resistance is weak such as an object that is thin or soft*, or the door is near latched position, *the automatic stop and reversal may not detect the resistance* and the closing operation will continue.

Id. (emphases added). A POSITA would understand the emphasized portions to mean that the power sliding door uses a “peak load sensor configured to sense a threshold, such that when a load on the door is higher than a threshold a control unit reverses the direction of the door and keeps the door from closing.” Ex. 1002 at ¶ 130. Specifically, a POSITA would understand that the reason resistance may not be detected when “the resistance is weak such as an object that is thin or soft” is that such objects would not cause the “load on the door” to be “higher than a threshold.” Ex. 1002 ¶ 131.

A POSITA would be motivated to include an “automatic stop and reversal” feature, as disclosed by Kia, with the combination of Modec and Messano. The “automatic stop and reversal” feature is self-evidently an advantageous safety feature that would be known to reduce injuries and property damage caused by an automatic sliding door closing on a person or property. Further, Kia is within the same general technological field of vehicle doors as Modec and a POSITA would

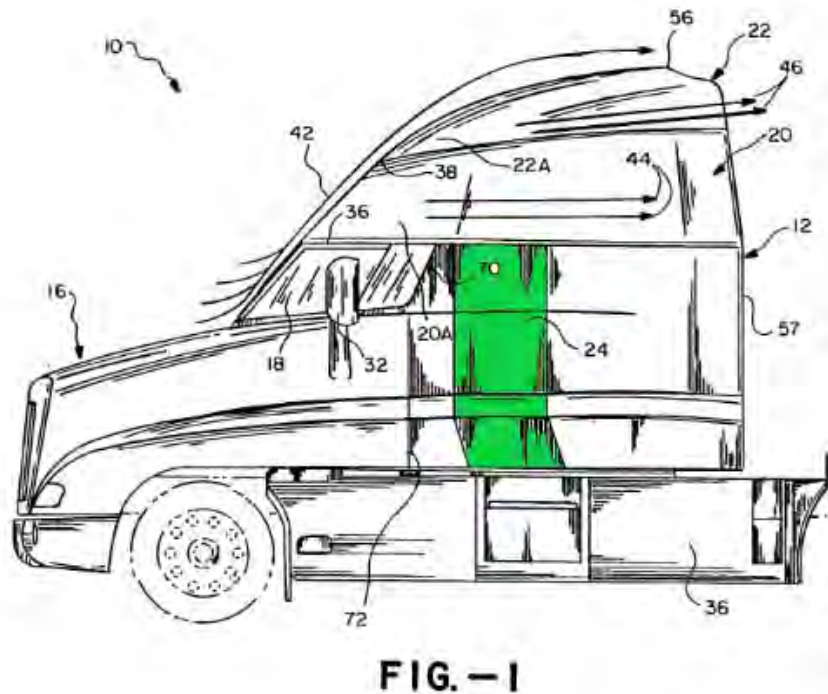
Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

understand that the same design of an “automatic stop and reversal” feature for a passenger van could be easily scaled and successfully used with a semi-truck vehicle to provide the same safety advantages. Accordingly, claim 13 would have been obvious over Modec, Messano, and Kia. Ex. 1002 ¶¶ 132-133.

H. Ground 7: Claim 14 would have been obvious over Modec, Messano, and Marlowe

Claim 14 depends from claim 1 and adds the limitation “wherein the door is located approximately at a midpoint of the body of the semi-truck vehicle to provide ingress and egress into the cabin.” It would have been obvious to modify the combination of Modec and Messano to meet this limitation in view of Marlowe. Figure 1 of Marlowe, reproduced below, shows driver’s door **24** (green).

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084



Ex. 1008, Fig. 1 (color added). Thus, Marlowe discloses a semi-truck “wherein the door is located approximately at a midpoint of the body of the semi-truck vehicle to provide ingress and egress into the cabin.” A POSITA would have been motivated to modify the combination of Modec and Messano with this obvious design choice in order to provide additional space behind the seat. Ex. 1002 ¶¶ 135-136.

I. Ground 8: Claims 17 and 19 would have been obvious over Modec, Messano, and Plummer

1. Claim 17: “wherein the vehicle further comprises a sleeper within the cabin.”

As explained above, claim 1 would have been obvious over Modec and Messano. It would have been obvious to modify the combination of Modec and

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

Messano to include “a sleeper within the cabin” in view of the disclosure of Plummer. Plummer discloses, “As is indicated in FIG. 5, the interior region of a long-haul truck typically includes a sleeper unit 142 and a driving compartment 144.” Exhibit 1012 at 15:38-40. Figure 5 is reproduced below.

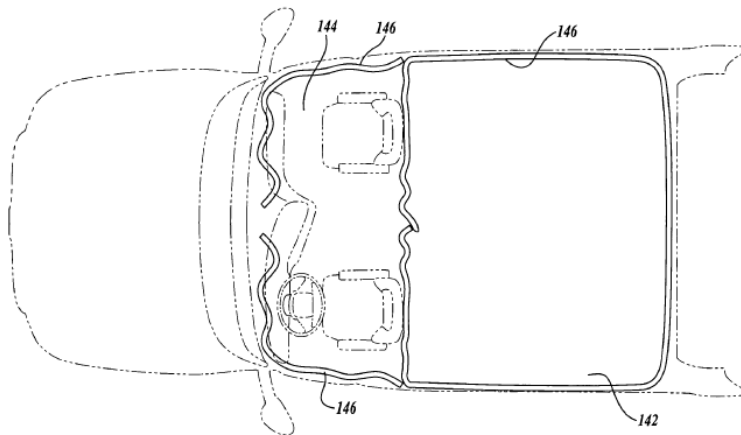


Fig. 5.

It would have been obvious to add the conventional sleeper described in Plummer for the conventional reason of providing a place for the driver to sleep during long-haul trips. Ex. 1002 ¶¶ 138-140.

2. **Claim 19: “wherein the sleeper comprises a bunk bed, a cooling appliance having a volume that is at least 15 cubic feet, and a microwave oven.”**

It would have also been obvious to modify the combination of Modec and Messano to include a sleeper with “a bunk bed, a cooling appliance having a volume that is at least 15 cubic feet, and a microwave oven” in view of the disclosure of Plummer. A POSITA would understand that Plummer’s “sleeper unit” would have a bed and that it would have been an obvious design choice for

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

the bed to be a “bunk bed” to provide storage space or to locate other features of the truck under the bed. It was known to include a bunk bed in a semi-truck sleeper unit. *See* Ex. 1015. Plummer also discloses that “[v]arious vehicles such as long-haul trucks . . . include heating and air conditioning, lighting, and appliances such as refrigerators, coffee makers and microwave ovens.” Ex. 1012 at 1:15-21. A POSITA would have understood that a refrigerator is “a cooling appliance,” that the selection of a specific volume for a refrigerator would be an obvious design choice, and that it would have been obvious to select a refrigerator having a “volume that is at least 15 cubic feet” to maximize the amount of food that could be stored. A POSITA would have been motivated to include a “bunk bed, a cooling appliance having a volume that is at least 15 cubic feet, and a microwave oven” with the combination of Modec and Messano for the conventional reasons of providing a place for the driver to sleep and providing appliances for the driver to refrigerate and cook or warm food during long-haul trips. Ex. 1002 ¶¶ 142-144.

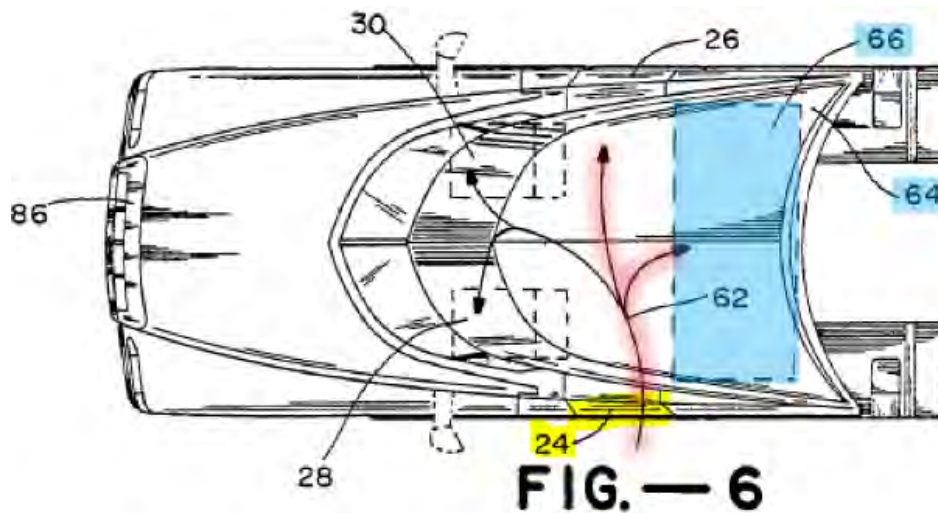
J. Ground 9: Claims 18 and 20 would have been obvious over Modec, Messano, and Marlowe

1. Claim 18: “wherein the door opens into the sleeper of the cabin.”

Claim 18 depends from claim 17 and adds the limitation that “the door opens into the sleeper of the cabin.” Claim 18 would have been obvious over Modec, Messano, and Marlowe. Marlowe discloses a semi-truck with a door that “opens

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

into the sleeper of the cabin.” Figure 6, reproduced below, is a “top plan view” “diagrammatically illustrating the interior of the trucks cab and the way in which an individual can enter the cab through one of its side doors.” Ex. 1008 at 2:41-44. Figure 6 shows “driver and passenger doors **24** [yellow] and **26**.” *Id.* at 5:35-36. Figure 6 also shows that the “cab **12** includes a sleeper section **64** including a bed [blue] generally represented at **66**.”



Id., 5:40-42; Fig. 6. A POSITA would understand that the sleeper section (64) and the bed (66) are the “sleeper of the cabin.” Marlowe discloses that “[t]his sleeper section is located rearwardly of doors **24** and **26** so as not to obstruct access into and out of the cab, again as depicted by arrow **62**.” *Id.* at 5:42-45. Arrow 62 clearly shows the sleeper may be accessed from the door of the cabin. Thus, Marlowe discloses a semi-truck “wherein the door opens into the sleeper of the cabin.” Ex. 1002 ¶ 146.

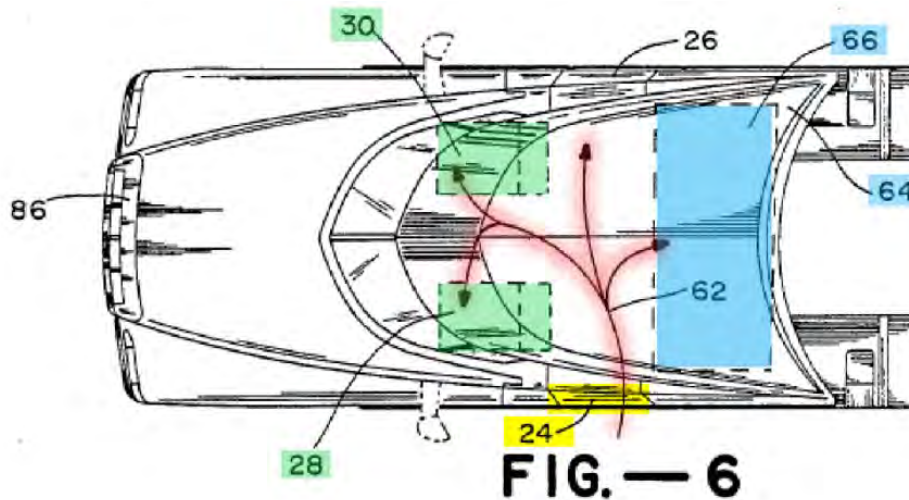
Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

A POSITA would have been motivated to add the disclosed sleeper section of Marlowe to Modec and Messano for the conventional reason of providing a place for the driver to sleep during long-haul trips. The Future Truck Report provides additional motivation for a POSITA to locate the door so that it opens into the sleeper. Specifically, the Future Truck Report expressly discloses that a door located next to the driver seat or the passenger seat weakens the cab structure and restricts the size of the driver or passenger windows. Therefore, a cab design in which the door opens into the sleeper of the cabin instead of directly into the driver or passenger would increase the cab strength and allow for larger driver and passenger windows, increasing safety and visibility. Ex. 1002 ¶ 147.

2. Claim 20: “wherein entry into the cabin of the semi-truck vehicle provides full access to the seat and the sleeper simultaneously.”

Claim 20 depends from claim 17 and adds the limitation that “entry into the cabin of the semi-truck vehicle provides full access to the seat and the sleeper simultaneously.” Claim 20 would have been obvious over Modec, Messano, and Marlowe. Marlowe discloses a semi-truck “wherein entry into the cabin of the semi-truck vehicle provides full access to the seat and the sleeper simultaneously.” Figure 6 of Marlowe, reproduced below, is a “top plan view” “diagrammatically illustrating the interior of the trucks cab and the way in which an individual can enter the cab through one of its side doors.” Ex. 1008 at 2:41-44.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084



Id., Figure 6. Figure 6 shows “driver and passenger doors 24 [yellow] and 26 are located rearwardly of driver and passenger seats 28 and 30 [green] so as not to obstruct access into and out of the cab, as depicted by arrow 62 [red].” *Id.* at 5:35-40. Arrow 62 thus clearly shows that entry into the cabin through the door (24) provides access to the seats. *Id.*, Fig. 6. As discussed in Section IV(J)(1) above, Marlowe also discloses a semi-truck “wherein the door opens into the sleeper of the cabin.” Therefore, Marlowe discloses a semi-truck “wherein entry into the cabin of the semi-truck vehicle provides full access to the seat and the sleeper simultaneously.” Ex. 1002 ¶ 149.

A POSITA would have been motivated to add the disclosed sleeper section of Marlowe to Modec and Messano for the same reasons as described in Section VI(J)(1), above. Ex. 1002 ¶¶ 150-152.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

K. Ground 10: Claim 22 would have been obvious over Modec, Messano, and the Man Annual Report

Claim 22 depends from claim 1 and adds the limitation “wherein an opening into the cabin comprises a clearance that is at least six feet five inches in height.” In further view of the Man Annual Report, it would have been obvious to modify the combination of Modec and Messano to make the door “at least six feet five inches in height” to allow most drivers to enter the truck without stooping, crouching, or risking head injury. Ex. 1002 ¶¶ 154-158.

The Man Annual Report published several pictures of the Man Concept S semi-truck in 2012, including the following picture disclosing a semi-truck vehicle with a full-size door that extends almost the entire height of the cabin:



Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Ex. 1013 at 9. A POSITA would understand that a door that extends almost the entire height of the cabin, as pictured, would provide “an opening into the cabin” with “a clearance that is at least six feet five inches in height.” Ex. 1002 ¶ 154. Further, the Man Annual Report also published a picture disclosing the same Man Concept S semi-truck near two people:



Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Ex. 1013 at 8. A POSITA would understand that this picture establishes that the cabin is several feet taller than the people standing in front of the truck. Ex. 1002 ¶ 155. Based on that information and the picture showing that the door extends almost the entire height of the cabin, a POSITA would conclude that the door provides “an opening into the cabin” with “a clearance that is at least six feet five inches in height.” Ex. 1002 ¶ 156.

Further, even if Patent Owner argues the pictures do not establish a precise door height of “at least six feet five inches,” making the door at least that height would be an obvious design choice for large vehicles such as semi-trucks. It would be self-evident to a POSITA that taller doors are generally preferred to shorter doors because they allow a wider variety of people to enter them without stooping, crouching, or risking head injury. Further, a POSITA would understand that a door “at least six feet five inches in height” would allow most drivers to enter the truck without stooping, crouching, or risking head injury. Ex. 1002 ¶ 157. Moreover, a POSITA would have understood that making the door “at least six feet five inches in height” would require nothing more than routine scaling of the overall size of the cabin and that no technical or other obstacle would prevent the use of a door of that height with Modec and Messano. Ex. 1002 ¶ 158. Accordingly, claim 22 would have been obvious over Modec, Messano, and the Man Annual Report. Ex. 1002 ¶¶ 153-158.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

L. Ground 11: Claims 23-24 would have been obvious over Modec, Messano, and Freightliner

1. **Claim 23: “wherein the semi-truck vehicle further comprises at least one full-size step and at least one hand hold to provide at least two points of leverage and for access and entry into the interior of the cabin.”**

It would have been obvious to a POSITA to modify the cabin of Modec to have at least one full-size step and at least one hand hold to provide at least two points of leverage and for access and entry into the interior of the cabin. A POSITA would be motivated to design a cabin with such features, as they would be aware of the general practice in the industry of including steps and handholds to provide leverage and for access and entry into the cabin of trucks. Ex. 1002 ¶ 160. Thus, it would be an obvious design choice to include these features.

Even if not obvious in view of Modec and Messano alone, this limitation would have been obvious in view of Modec in combination with Messano and Freightliner. Ex. 1002 ¶ 161. The below image is reproduced from Freightliner.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Ex. 1014, 14.



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Ex. 1019, 5 (JSTOR image of same figure). A POSITA would recognize that Figure 13 depicts a semi-truck with two full-size steps and two handles. Ex. 1002 ¶ 161. A POSITA would also recognize that Figure 13 depicts a user with at least

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

one hand on a hand hold and at least one foot on a step, giving the user at least two points of leverage. *Id.* Thus, Freightliner explicitly discloses semi-trucks wherein the semitruck vehicle further comprises at least one full-size step and at least one hand hold to provide at least two points of leverage and for access and entry into the interior of the cabin.

A POSITA would be motivated to include the full-size step and handhold of Freightliner with the combination of Modec and Messano to make it easier and safer for the driver to enter the cabin. Ex. 1002 ¶ 162. Indeed, Freightliner expressly teaches that steps and handholds are necessary to allow a driver to safely and more easily enter the cabin. *Id.*; Exhibit 1014 at 14(illustrating a COE truck and explaining the need for steps and handholds to enter the cabin).

2. **Claim 24: “wherein there are two steps and two handholds that provide four points of leverage for entry into the interior of the cabin, such that a user enters into the cabin facing forward.”**

As described above, Figure 13 of Freightliner depicts a semi-truck with two full-size steps and two handles. Further, as shown in Figure 13, reproduced below, the user enters into the cabin facing forward.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Exhibit 1014, 14; Ex. 1002 ¶ 164.



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Ex. 1019, 5 (JSTOR image of same figure). A POSITA would recognize that Figure 13 depicts a semi-truck with two full-size steps and two handles. Ex. 1002 ¶ 164. One of skill would also recognize that the user in Figure 13 could place

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

each of his two hands on a different handle, and each of his two feet on a different step, giving the user four points of leverage for entry into the interior of the cabin. *Id.* Thus, Freightliner explicitly discloses semi-trucks wherein there are two steps and two handholds that provide four points of leverage for entry into the interior of the cabin, such that a user enters into the cabin facing forward.

A POSITA would be motivated to include the full-size steps and handholds of Freightliner with the combination of Modec and Messano to make it easier and safer for the driver to enter the cabin. Ex. 1002 ¶ 165. Indeed, Freightliner expressly teaches that steps and handholds are necessary to allow a driver to safely and more easily enter the cabin. *Id.*; Ex. 1014, 14 (illustrating a COE truck and explaining the need for steps and handholds to enter the cabin).

V. SECONDARY CONSIDERATIONS DO NOT OVERCOME THE STRONG EVIDENCE OF OBVIOUSNESS

With respect to the obviousness grounds set forth above, Patent Owner may attempt to set forth secondary considerations of non-obviousness. Although secondary considerations must be taken into account, they do not control the obviousness conclusion. *See Newell Cos., Inc. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988). And in cases where a strong *prima facie* obviousness showing exists, the Federal Circuit has repeatedly held that even relevant secondary considerations supported by substantial evidence may not dislodge the primary conclusion of obviousness. *See, e.g., Leapfrog Enters. Inc. v. Fisher-Price*,

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Inc., 485 F.3d 1157, 1162 (Fed. Cir. 2007).

Neither Petitioner nor its expert are aware of any secondary considerations that would outweigh the strong *prima facie* case of obviousness set forth herein. Ex. 1002 ¶ 166. Petitioner reserves the right to address secondary considerations as appropriate based on Patent Owner's potential allegations of non-obviousness.

VI. MANDATORY NOTICES, FEES, AND STANDING

A. Real Party-In-Interest (37 C.F.R. §42.8(b)(1))

The real party-in-interest is Tesla, Inc.

B. Related Matters (37 C.F.R. §42.8(b)(2))

Patent Owner has asserted the '084 patent in a patent infringement lawsuit entitled *Nikola Corporation v. Tesla, Inc.* in the Northern District of California (No. 3:18-cv-7460). Petitioner is presently unaware of any other proceeding that may affect, or be affected by, the decisions in this proceeding.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

C. Lead and Backup Counsel (37 C.F.R. §42.8(b)(3))

Lead Counsel	Back-up Counsel
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D. Service Information (37 C.F.R. §42.8(b)(4))

Service information for lead and back-up counsel is provided above.

Petitioner also consents to service by email at: BoxTSLAL1@knobbe.com.

E. Payment of Fees

The fee required by 37 C.F.R. §42.15(a) has been paid. The undersigned authorizes payment for any additional fees that may be due in connection with this Petition to be charged to Deposit Account No. 11-1410.

F. Grounds For Standing

Petitioner certifies the '084 patent is available for IPR and Petitioner is not barred or estopped from requesting IPR of the challenged claims.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

VII. CONCLUSION

For the reasons above, Petitioner requests institution of an IPR for claims 1-26 of the '084 patent, and ultimately a judgment cancelling the claims as unpatentable.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: September 24, 2019

By: /Ted M. Cannon/

Ted M. Cannon (Reg. No. 55,036)

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Attorneys for Petitioner Tesla, Inc.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. §42.24(d), the undersigned certifies that foregoing **PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 10,077,084**, exclusive of the parts exempted as provided in 37 C.F.R. §42.24(a), contains 13,998 words and therefore complies with the type-volume limitations of 37 C.F.R. §42.24(a).

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: September 24, 2019

By: /Ted M. Cannon/

Ted M. Cannon (Reg. No. 55,036)

Michael L. Fuller (Reg. No. 36,516)

Attorneys for Petitioner Tesla, Inc.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,077,084** and **EXHIBITS 1001–1021** are being served on September 24, 2019, via Federal Express overnight mail on counsel of record for U.S. Patent No. 10,077,084 as addressed below:

Terrence J. Edwards
TechLaw Ventures, PLLC
3290 West Mayflower Ave.
Lehi, UT 84043

A courtesy copy is also being served on counsel for the patent holder in the pending district court litigation, *Nikola Corporation v. Tesla, Inc.*, No. 3:18-cv-7460 (N.D. Cal.):

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Attorneys for Petitioner Tesla, Inc.

Exhibit C

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.

Petitioner,

v.

NIKOLA CORPORATION

Patent Owner.

Case No. IPR2019-01646
U.S. Patent No. 10,077,084

DECLARATION OF BRIAN BAKER

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Table of Contents

I.	BACKGROUND AND QUALIFICATIONS	1
II.	INFORMATION AND MATERIALS CONSIDERED	4
III.	APPLICABLE LEGAL STANDARDS	6
IV.	OVERVIEW OF THE '084 PATENT	13
V.	STATE OF THE ART BEFORE THE '084 PATENT	14
VI.	CLAIM CONSTRUCTION	20
A.	“adjacent to” (all claims)	20
VII.	PATENTABILITY ANALYSIS OF THE '084 PATENT CLAIMS	26
A.	Background and Prior Art Status of the Asserted References	26
1.	The Earliest Effective Filing Date of the '084 Patent	26
2.	Modec	26
3.	Messano	27
4.	Fleet Transport	28
5.	Future Truck Report	30
6.	Marlowe	32
7.	Eltra	33
8.	Racz	33
9.	Kia	34
10.	Plummer	35
11.	Man Annual Report	36

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

12. Freightliner.....	38
B. Ground 1: Claims 1-5, 15-16, and 25 would have been obvious over Modec and Messano	41
1. Claim 1	41
2. Claim 2: “wherein the semi-truck vehicle is an electric vehicle comprising a battery pack that is coupled to an electric drive train.”	59
3. Claim 3: “wherein the semitruck vehicle comprises a combustion engine configured to generate power by using combustion energy of fuel and Claim 25: “wherein the semi- truck vehicle is a hybrid vehicle comprising electrical and combustion components.”	60
4. Claim 4: “wherein the semitruck vehicle comprises only a single door.”	61
5. Claim 5: “wherein the single door is located on a left side when the user is seated in the seat of the semi-truck vehicle.”	61
6. Claim 15: “wherein the vehicle is an electric driven class 7 semi-truck.”	62
7. Claim 16: “wherein the vehicle is an electric driven class 8 semi-truck.”	62
C. Ground 2: Claim 6 would have been obvious over Modec, Messano, and the Future Truck Report	63
D. Ground 3: Claims 7, 8, 21, and 26 would have been obvious over Modec, Messano, and Marlowe	65
1. Claim 7: “wherein the door of the semi-truck vehicle comprises a first door and a second door.”	65

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

2.	Claim 8: “wherein the first door is located on a left side when the user is seated in the seat of the semi-truck vehicle and the second door is located on a right side when the user is seated in the seat of the semi-truck vehicle.”	66
3.	Claim 21	68
4.	Claim 26	70
E.	Ground 4: Claims 9-11 would have been obvious over Modec, Messano, and Eltra	75
1.	Claim 9: “wherein the door slides on an upper track, a mid-track, and a lower track located externally on the body of the semi-truck vehicle to open and close the door.”	75
2.	Claim 10: “wherein the door moves outward with respect to the body and backward with respect to the seat as the door is moved to an open position.”	76
3.	Claim 11: “wherein an activation signal turns on a drive motor to pull the door open and closed.”	77
F.	Ground 5: Claim 12 would have been obvious over Modec, Messano, and Racz	78
G.	Ground 6: Claim 13 would have been obvious over Modec, Messano, and Kia.....	79
H.	Ground 7: Claim 14 would have been obvious over Modec, Messano, and Marlowe.....	81
I.	Ground 8: Claims 17 and 19 would have been obvious over Modec, Messano, and Plummer	83

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

2.	Claim 19: “wherein the sleeper comprises a bunk bed, a cooling appliance having a volume that is at least 15 cubic feet, and a microwave oven.”	84
J.	Ground 9: Claims 18 and 20 would have been obvious over Modec, Messano, and Marlowe	85
1.	Claim 18: “wherein the door opens into the sleeper of the cabin.”	85
2.	Claim 20: “wherein entry into the cabin of the semi-truck vehicle provides full access to the seat and the sleeper simultaneously.”	87
K.	Ground 10: Claim 22 would have been obvious over Modec, Messano, and the Man Annual Report	89
L.	Ground 11: Claims 23-24 would have been obvious over Modec, Messano and Freightliner	93
1.	Claim 23: “wherein the semi-truck vehicle further comprises at least one full-size step and at least one hand hold to provide at least two points of leverage and for access and entry into the interior of the cabin.”	93
2.	Claim 24: “wherein there are two steps and two handholds that provide four points of leverage for entry into the interior of the cabin, such that a user enters into the cabin facing forward.” ..	95
M.	Secondary Considerations	97
VIII.	CONCLUSION	98

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

I, Brian C. Baker, declare and state as follows:

I. BACKGROUND AND QUALIFICATIONS

1. I have been retained by the law firm of Knobbe, Martens, Olson & Bear, LLP, which I understand represents Tesla, Inc. (“Petitioner”) in connection with this proceeding. I have been asked by counsel to review relevant materials and render my expert opinion in connection with a Petition for *Inter Partes* Review (“IPR”) of U.S. Patent No. 10,077,084 (“the ’084 patent”) that I understand Petitioner will file. This declaration sets forth my own analysis, opinions, and conclusions based on my own consideration of the ’084 patent, the prior art, and other materials identified herein. I understand that Petitioner will rely upon my analysis, opinions, and conclusions in support of the Petition. However, the Petition has not been provided to me, I have not reviewed the Petition, and I have not based my analysis, opinions, and conclusions on the Petition.

2. I am an expert in the field of automotive design and am well versed in designing aesthetic and functional features of vehicles, including features related to ergonomic and safety issues. I have studied, researched, taught, and practiced in the field of automotive design for approximately 40 years.

3. I received Bachelor of Science (B.S.) degree with honors in the field of Transportation Design from the Art Center College of Design in Pasadena, California in 1984. After receiving my B.S. degree, I worked as an automotive

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

designer at General Motors Corporation's Technical & Design Center in Warren, Michigan for more 25 years, from 1984 to 2009. While there, I worked on multiple automotive design projects, including Chevrolet trucks and cars and Cadillac SUVs and cars. I lead a team of 30 people in the creation of advanced vehicle proposals for all of GM's divisions. This included aerodynamic studies, vehicle packaging, styling proposals and ergonomic and safety features for vehicles of all sizes.

4. In 2009, I founded the automotive design consulting firm AutoArcheology LLC. I have worked as an automotive design consultant with that firm from its founding until the present. I have consulted for major automotive companies, including Ford Motor Company, Hyundai, Mercedes Commercial Vehicles, Integra Motorcoach, and Fiat Chrysler Automobiles, on numerous design projects, including the design of motorcoach interiors and exteriors, aesthetic differentiation, future design strategies, and upfitting of commercial vehicle interiors. All of these projects include styling, packaging, ergonomic and safety considerations.

5. While working as an automotive designer and consultant in the automobile industry, I have also taught university-level classes in automotive design for 30 years. For example, from 1988 to 1990, I was an adjunct professor in the School of Industrial Design at Wayne State University in Detroit, Michigan.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

From 2007 to the present, I have taught a course in the history of modern designs at the College for Creative Studies in Detroit, Michigan. And from 2010 to the present, I have taught a course in the history of modern industrial and vehicle design at the School of Design of the Lawrence Technical University in Southfield, Michigan.

6. I have received a patent and several awards for my contributions to vehicle design. I am a named inventor of U.S. Patent No. 6,347,828, which relates to an actuation mechanism for a two piece retractable hard-top roof for a convertible truck. This patent stemmed from my design work as the senior lead designer of the Chevrolet SSR convertible truck while I was working at General Motors. I also received an award for the “Most Significant Concept” at the 2000 North America International Auto Show in connection with my work on the Chevrolet SSR. In addition, I was a design historian for the ESPN TV program “Harley Earl and NASCAR” and received a bronze medal from the Book Publishers Association for my work on the book Driving Style: The first century of GM design.

7. I have given presentations as an expert on automotive design at numerous conferences, including the India Automotive Summit in 2014, the ITB Futures conference in 2016, the IQPC Advanced Lighting Strategies Conference in 2018, the American Cultural Immersion Conference in 2018 in Japan, and the

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Autonomous Vehicle Conference in 2018 in Detroit. As a speaker at these conferences I am called upon to opine on vehicle trends and the future of transportation.

8. A copy of my latest curriculum vitae (C.V.) is submitted with this declaration as Ex. 1017.

9. My compensation is in no way contingent on the results of these or any other proceedings relating to the above-captioned patent.

II. INFORMATION AND MATERIALS CONSIDERED

10. In order to render my opinions in this matter, I primarily reviewed the specification and claims of the '084 patent (Ex. 1001), its file history (Ex. 1003), and various prior art references identified herein. My review included at least the following exhibits:

Exhibit No.	Description
1001	U.S. Patent No. 10,077,084 (“the ’084 patent”).
1003	File History of the ’084 patent.
1004	PCT Application Publication No. WO 2009/001086 A2 to Modec Limited (“Modec”).
1005	U.S. Patent No. 7,338,335 to Messano (“Messano”).
1006	October 2010 <i>Fleet Transport</i> magazine (“Fleet Transport”).
1007	The Maintenance Council of the American Trucking Association, Future Truck Committee Information Report: 2001-2, 3 (Mike Malecha et al., eds., March 2001) (“Future Truck

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

	Report”).
1008	U.S. Patent No. 4,932,716 to Marlowe (“Marlowe”).
1009	PCT Application Publication No. 1981/001587 A1 to Eltra Corporation (“Eltra”).
1010	U.S. Patent Application Publication No. 2003/0006628 A1 to Racz (“Racz”).
1011	2013 Kia Sedona User Manual (“Kia”).
1012	U.S. Patent No. 7,145,788 B2 to Plummer (“Plummer”).
1013	2012 Annual Report of the Man Group (“Man Annual Report”).
1014	Loczi, Josef. “Ergonomics Program at Freightliner.” SAE Transactions, vol. 109, 2000, pp. 462–469 (“Freightliner”).
1015	U.S. Patent Application Publication No. 2008/0164724 A1 to Burnett (“Burnett”).
1016	Definitions of “adjacent” from unabridged.merriam-webster.com
1017	<i>My Curriculum Vitae</i>
1018	Printout of JSTOR webpage referring to Loczi, Josef. “Ergonomics Program at Freightliner.” SAE Transactions, vol. 109, 2000, pp. 462–469
1019	Images accessed from JSTOR webpage of Loczi, Josef. “Ergonomics Program at Freightliner.” SAE Transactions, vol. 109, 2000, pp. 462–469
1020	U.S. Patent Publication No. 2008/0191515 to Hollenbeck (“Hollenbeck”).
1021	U.S. Patent Publication No. 2011/0121606 to Engelbrecht (“Engelbrecht”).

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

11. The above references are in addition to any other materials referenced directly or indirectly in this declaration. I expect to review additional materials that are provided by the parties as this proceeding progresses.

III. APPLICABLE LEGAL STANDARDS

12. I am not an attorney. For purposes of this declaration, I have been informed about certain aspects of the law that are relevant to my opinions. My understanding of the law is as follows.

13. I have been informed and understand that claim construction and patentability is generally analyzed from the perspective of a hypothetical person of ordinary skill in the art of the invention at the time of the invention.

14. I believe that “automotive design” is the relevant art or field of the invention for purposes of assessing the patentability of the ’084 patent. This is consistent with the identification of the “technical field” in the ’084 patent, which states:

The disclosure relates generally to systems, methods, and devices for an automobile door or window, and more particularly relates to methods, systems, and devices for a door on a semi-truck vehicle.

Ex. 1001 at 1:27-30. Based on this identification of the “technical field,” it would be possible to define the relevant art or field more narrowly as “automotive door design” or even “semi-truck door design.” However, I believe that the more

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

general category “automotive design” is appropriate because a typical person in charge of designing an automobile door or a semi-truck door would be a generalist within the broader field of automotive design. Further, a person of ordinary skill in the art of “automotive design” would be familiar with design concepts relevant to vehicles of all sizes, including semi-trucks. In my view, defining the relevant art or field more narrowly than “automotive design”—such as “automotive door design” or “semi-truck door design”—would not fundamentally change my analysis and conclusions that the claims of the ’084 patent would have been obvious. In fact, if anything, a narrower definition of the art or field of the invention would make it even easier for a person of ordinary skill in the art to conclude that the claims of the ’084 patent would have been obvious.

15. The ’084 patent refers in general terms to electrical components such as an electric drive train and electric batteries. However, the ’084 patent does not disclose or claim innovative or new ways to make those electrical components. Rather, the features that the ’084 patent assert to be innovative relate to the relative positioning of the door, seat, and front wheel well to make it easier and safer for a driver to enter and exit the vehicle. Accordingly, while a person of ordinary skill in the art would be familiar with basic design features of electric semi-trucks that would affect the relative positioning of the door, seat, and front wheel well, the person of ordinary skill in the art would not likely be, and would not need to be, an

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

electrical engineer or expert in the details of how the electrical components of electric semi-trucks work, in order to assess the patentability of the claims of the '084 patent.

16. I have been informed and understand that, for purposes of this IPR, the time of the invention is the effective filing date of the '084 patent. I understand the effective filing date of the '084 patent could be sometime between December 30, 2015, which is when the first provisional application related to the '084 patent was filed, and December 30, 2016, which is when the actual application resulting in the '084 patent was filed. Because all of the prior art and other evidence upon which I rely would have been known to a person of ordinary skill in the art more than a year before the earliest December 30, 2015 date, I do not believe it makes any difference to my analysis or opinions whether the effective filing date of the '084 patent is December 30, 2015 or a later date. Accordingly, while I have not conducted any analysis and express no opinion about whether December 30, 2015 is the effective filing date of the '084 patent, I have assumed, solely for the purpose of my analysis and opinions in this IPR, that December 30, 2015 is the effective filing date of the '084 patent. For conciseness, in this declaration I sometimes refer to the time period before December 30, 2015 as the “relevant time.”

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

17. In my view, a person of ordinary skill in the art at the relevant time would have had at least a Bachelor of Science degree in an industrial design field and at least two years of experience in automotive design.

18. As described above, I have extensive experience in automotive design. Based on my experience, I have a good understanding of the relevant field at the relevant time. I also have an understanding of the capabilities of a person of ordinary skill in the relevant field at the relevant time. I have supervised and directed many such persons over the course of my career. Further, I had at least those capabilities myself at the relevant time. My experience includes years of consumer research under controlled conditions to assess consumer preferences, including which designs functioned to make entry and exit from vehicles comfortable and safe for consumers.

19. Unless expressly stated otherwise herein, I conducted my analysis and reached the conclusions stated herein from the perspective of a person of ordinary skill in the art at the relevant time. Accordingly, it should be understood, even if not expressly stated, that my opinions stated herein are from the perspective of a person of ordinary skill in the art at the relevant time. For example, to the extent I opine that a claim of the '084 patent would have been obvious, I mean that the claim would have been obvious to a person of ordinary skill in the art at the relevant time.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

20. I have been informed and understand that the first step of a patentability analysis is to construe the claims. I understand that the claim construction standard applicable to the '084 patent is called the “*Phillips* claim construction standard” or “*Phillips* standard,” based on the name of an appeals court case. I understand that, under the *Phillips* claim construction standard, claim terms are generally given their ordinary and customary meaning to a person of ordinary skill in the art at the time of the invention after reading the entire patent. Ordinary meaning may be evidenced by a variety of sources, including the words of the claims themselves, the written description, the drawings, and extrinsic sources. The ordinary meaning must be consistent with the specification.

21. I have been informed and understand that a patent claim is unpatentable as “anticipated” if a single prior art reference discloses every claim limitation as arranged in the claim. I understand that the reference need not use the exact same words as the claim as long as the reference discloses the same subject matter expressed by the claim language.

22. I have been informed and understand that a patent claim can still be unpatentable, even if it was not anticipated, if the differences between the subject matter of the claim and the prior art would have been obvious to a person of ordinary skill in the art at the relevant time. I have been informed and understand

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

that a determination of whether a claim would have been obvious should be based upon several factors, including, among others:

- the level of ordinary skill in the art at the time the application was filed;
- the scope and content of the prior art;
- what differences, if any, existed between the claimed invention and the prior art; and
- any known secondary considerations of non-obviousness, such as commercial success of the claimed invention due to the claimed features, long-felt but unsolved needs, and failure of others.

23. I have been informed and understand that the teachings of a single reference may be modified, or two or more references may be combined and modified, to support a conclusion that a claim would have been obvious to a person of ordinary skill in the art at the relevant time. I understand that a determination of obviousness based on a modification or combination of references must be supported by a showing that a person of ordinary skill in the art would have had a motivation or reason to modify or combine the references.

24. In determining whether a combination based on either a single reference or multiple references would have been obvious, it is appropriate to consider, among other factors:

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

- whether the teachings of the prior art references disclose known concepts combined in familiar ways, and when combined, would yield predictable results;
- whether a person of ordinary skill in the art could implement a predictable variation, and would see the benefit of doing so;
- whether the claimed elements represent one of a limited number of known design choices, and would have a reasonable expectation of success by those skilled in the art;
- whether a person of ordinary skill in the art would have recognized a reason to combine known elements in the manner described in the claim;
- whether there is some teaching or suggestion in the prior art to make the modification or combination of elements claimed in the patent; and
- whether the innovation applies a known technique that had been used to improve a similar device or method in a similar way.

25. I have been informed and understand that in considering obviousness, it is important not to determine obviousness using the benefit of hindsight derived from the patent being considered.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

IV. OVERVIEW OF THE '084 PATENT

26. The earliest effective filing date of the '084 patent is December 30, 2015, when the first provisional application to which the '084 patent claims priority was filed. Ex. 1001, cover page 2. The effective filing date of the '084 patent may be as late as December 30, 2016, when the actual application from which the patent issued was filed. *Id.*, cover.

27. The '084 patent is entitled “Systems, Methods, and Devices for an Automobile Door or Window.” *Id.* The specification asserts that Applicants for the '084 patent invented a new “semi-truck door” design “that allows a user to safely and comfortably enter and exit the vehicle.” *Id.* at 2:21-23. The specification describes the “technical field” of the alleged invention as “systems, methods, and devices for an automobile **door** or window” and, in particular, “methods, systems, and devices for a **door on a semi-truck vehicle.**” *Id.* at 1:27-30 (emphases added). Accordingly, the '084 patent does not describe an innovative new type of semi-truck vehicle or an innovative new engine or drive train for a semi-truck vehicle. The specification makes clear that the alleged invention is merely an allegedly new way to position the door to make entry and exit from the vehicle easier and safer.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

V. STATE OF THE ART BEFORE THE '084 PATENT

28. The '084 patent explains the alleged problem with prior art semi-truck doors as follows:

Vehicle doors, and particularly semi-truck doors, often provide immediate access to a seat located in the body of the vehicle. The doors are often hinged and require a user to enter or exit the vehicle at an angle that may be uncomfortable or even dangerous. Semi-truck doors and seats are located a significant distance above the ground and a user must be cautious to avoid injury when ascending the steps to the semi-truck door, opening the hinged semi-truck door, and sliding on to the seat while closing the hinged door.

Id. at 1:36-45. However, the fact that climbing through a door directly into a semi-truck seat may be uncomfortable or dangerous was recognized in the trucking industry many years before Applicants identified this problem in the '084 patent. That the background section of the '084 patent mentions these disadvantages of the traditional position of semi-truck doors shows that Applicants understood that these disadvantages were already appreciated in the industry. Further, a report by a trucking industry council of the American Trucking Associations published in 2001 indicated that the traditional position of semi-truck doors is ergonomically disadvantageous and unsafe, resulting in a relatively high level of driver injuries caused by slips. Ex. 1007 at 2-4.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

29. Applicants' purported solution of positioning the door so it allows the driver to enter the cabin from behind the seat was also well known in the art long before late 2015. The 2001 trucking industry report referenced above suggested that positioning the door behind the seat to provide rear entry into the cabin would make entry into the vehicle easier and increase safety by reducing driver injuries caused by slips.

30. Multiple prior art references disclosed doors positioned to allow rear-entry into a truck cabin so as to avoid the need to climb directly into the seat years before late 2015. During prosecution of the '084 patent, the Examiner cited at least two such prior art references. The Examiner cited Hollenbeck, a publication of a patent application filed in 2005 and published in 2008, which discloses a rear-entry door (31) in a semi-truck:

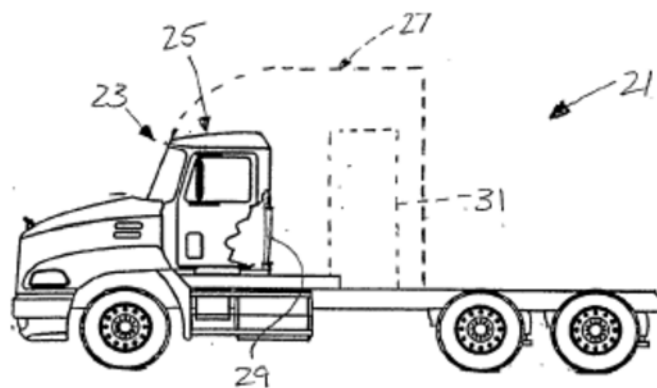


FIG. 1

Ex. 1003, 135-140; Ex. 1020, Fig. 1. The Examiner also cited Engelbrecht, a publication of a patent application with a provisional filing date in 2009 and a

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

publication date in 2011, which discloses a rear-entry door (37) in a recreational vehicle:

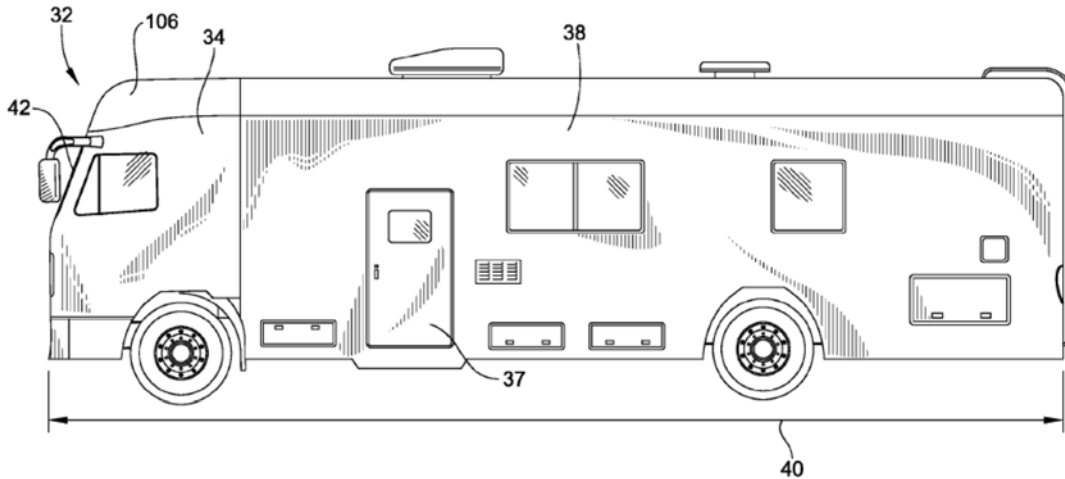


FIG. 3

Ex. 1003, 253-261; Ex. 1021, Fig. 3.

31. Based on the prior art cited by the Examiner, in my view the concept Applicants originally claimed as their invention—positioning the door so the driver can enter the cabin from behind the seat—is indisputably old and unpatentable. Further, separate and apart from any express suggestion in the prior art that such positioning of the door provides for more comfortable and safe entry and exit from the vehicle, a person of ordinary skill in the art would understand from a comparison of the different door-and-seat positioning available in the prior art that positioning the door so the driver can enter the cabin from behind the seat would provide for more comfortable and safe entry and exit from the vehicle.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

32. Applicants amended their claims to try to overcome the Examiner’s rejections. They specifically made the following claim amendment (with added language underlined and deleted language shown in strikethrough):

wherein the door is located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and the width of the door is disposed between the frontmost side of the door and the rearmost side of the door, at least a portion of the door being positioned behind the seat and at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well ~~with respect to the body, such that a majority of the width of the door is located at a backside of the seat when the door is in a closed position,~~ such that the door opens to provide ingress and egress into the cabin from a backside of the seat;

Ex. 1003 at 300. The Examiner relied on this amendment as “[t]he primary reason for the allowance of the claims.” *Id.* at 328.

33. The limitations added by this amendment—which recite the relative positions of the door, seat, and front wheel well—were well known in the art long before late 2015. For example, the October 2010 issue of the trucking industry magazine *Fleet Transport* published a picture of a “concept truck” with the frontmost side of its frontmost door adjacent to and behind the rearmost portion of the front wheel well.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Ex. 1006 at 1. The picture does not show the seat because the door is closed and the windows are darkly tinted. But the customary and obvious placement of a seat near the front of the windshield would put at least part of the seat in front of the rearmost portion of the front wheel well and would put at least a portion of the door behind the seat.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

34. In addition, a PCT application of Modec Limited published on December 31, 2008 expressly discloses the exact door, seat, and wheel well alignment claimed in the '084 patent:

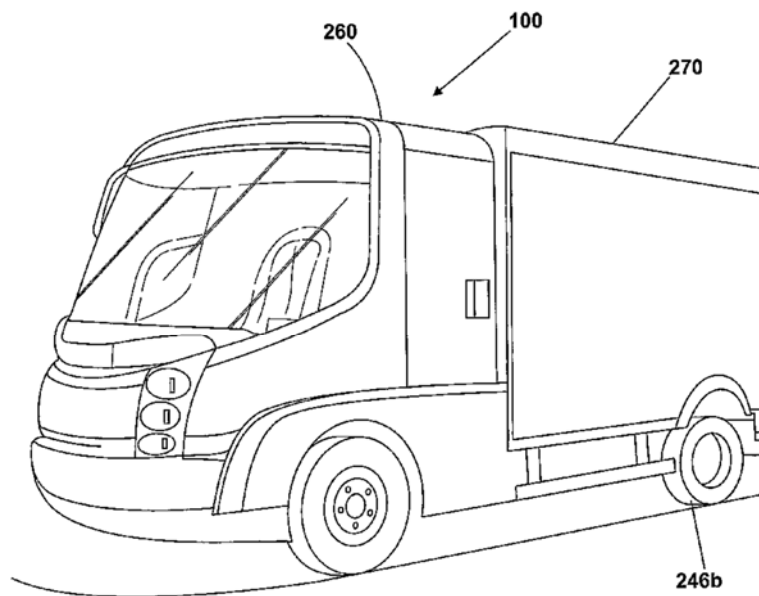


Fig. 1

Ex. 1004, Fig. 1. Modec discloses use of the disclosed door, seat, and wheel well alignment with *any* electric commercial vehicle. Ex. 1004 at 14:30-15:2. While Modec does not specifically mention a “semi-truck vehicle,” it would have at least encouraged a person of ordinary skill in the art—especially one concerned with the well-known comfort and safety problem of requiring the driver to climb directly into a semi-truck seat—to position the door, seat, and wheel well of an electric semi-truck in the manner disclosed by Modec. Further, U.S. Patent No. 7,338,335 to Messano, which issued in 2008 based on applications dating back to 2001, expressly teaches that electric drive trains can be used with semi-trucks and a wide

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

variety of other vehicles. Accordingly, the claimed door position recited in the '084 patent is simply not new or non-obvious based on what was well known years before the priority date of the '084 patent.

VI. CLAIM CONSTRUCTION

A. “adjacent to” (all claims)

35. Independent claims 1 and 26 of the '084 patent recite “a frontmost side of the door is *adjacent to* a rearmost portion of a front wheel well.” Ex. 1001, claim 1 (emphasis added). Dependent claims 2-25 incorporate the same phrase through dependency upon claim 1. Accordingly, every claim includes the phrase “adjacent to.”

36. The phrase “adjacent to” is not a specialized technical term with any specialized meaning within the relevant field of automotive design. It is a common English phrase describing the relative positioning of objects located near each other. Accordingly, a person of ordinary skill in the art would consider dictionary definitions to be useful to ascertain the customary and ordinary meaning of “adjacent to.” Two dictionary definitions of “adjacent” are “not distant or far off” and “nearby but not touching.” Ex. 1016. In my view, these definitions are consistent with (1) the ordinary meaning of the phrase to a person of ordinary skill in the art at the relevant time and (2) the usage of the phrase in the specification of the '084 patent. By contrast, another dictionary definition of “adjacent,” meaning

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

“having a common border : abutting, touching” (*id.*), is inconsistent with the usage of “adjacent to” in the ’084 patent, as explained below.

37. The specification of the ’084 patent uses “adjacent to” three times. The most relevant paragraph uses “adjacent to” in the specific context relevant to the claim language describing the relative position of the front side of the door and the backside of the front wheel well:

The front of the vehicle body **102** is denoted by the front windshield **130** and a front side of the door **110** is located *adjacent to* a backside of the front wheel well **144**. Alternatively, a portion of the door **110** is located above the front wheel well **144**. In an implementation, a front side of the door **110** is located at least six inches behind a backside of the front wheel well **144**. In an implementation, a front side of the door **110** is located at least twelve inches behind a backside of the front wheel well **144**. In an implementation, a front side of the door **110** is located at least eighteen inches behind a backside of the front wheel well **144**.

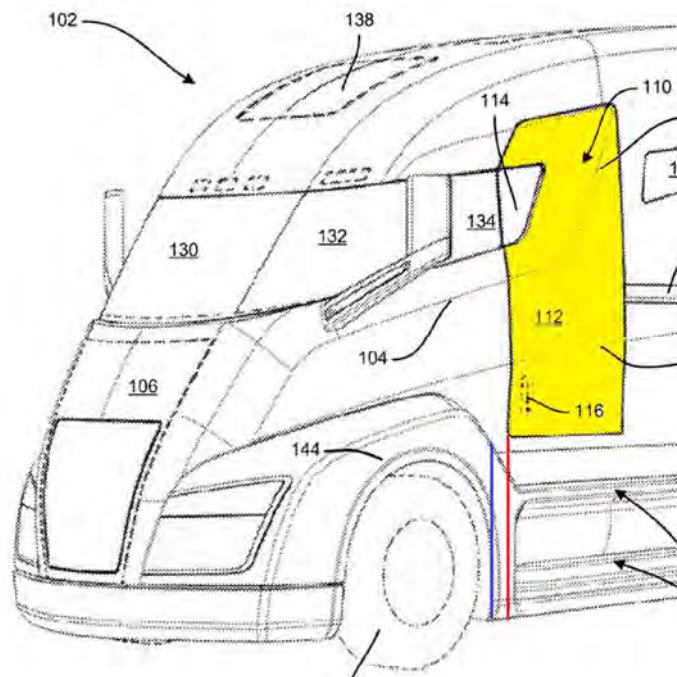
Ex. 1001 at 5:23-33 (bolded reference numerals in original; other emphasis added).

In this paragraph, “adjacent to” describes a relative positioning in which the front side of the door and the backside of the front wheel well are nearby but not touching each other. The three sentences beginning with “In an implementation” demonstrate that the front side of the door and backside of the front wheel well are nearby but not touching each other. Gaps of six, twelve, and eighteen inches

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

between these components show that the two components can be adjacent to each other without touching each other.

38. Further, the above paragraph describes Figure 1, which graphically illustrates that the frontside of the door and the backside of the front wheel well are nearby but not touching each other. The following blown-up portion of Figure 1 shows the door (yellow) and a small gap between the frontside (red line) of the door and the backside (blue line) of the front wheel well in the illustrated embodiment. As shown, the frontside of the door and the backside of the front wheel well are nearby each other but do not touch each other.



Ex. 1001, Fig. 1 (annotations added).

39. The specification includes two other usages of “adjacent to” that do not describe the relative positioning of the frontside of the door and the backside of

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

the front wheel well. However, these other two usages are consistent with construing “adjacent to” to mean “nearby but not touching.” The specification discloses that “cabin interior **650** includes a landing **652** adjacent to the door **110**.” Ex. 1001 at 10:34-35. The landing is obviously *nearby* the door because it is where one first steps upon entering the cabin through the door, but the landing and door itself do not touch each other. The specification also discloses a sliding door embodiment in which the “interior of the cabin includes a landing *immediately adjacent to* the sliding door.” *Id.* at 2:44-45 (emphasis added). That sentence’s usage of “immediately” to further modify “adjacent to” shows that the specification does not use “adjacent to” to mean “having a common border : abutting, touching.” There are no degrees of adjacency when “adjacent to” requires actual touching of two components. Thus, it would make no sense to describe two components as being “immediately adjacent to” each other if “adjacent to” by itself required the components to be touching. Therefore, the specification’s usage of “adjacent to” is consistent with the dictionary definition “nearby but not touching” but inconsistent with the dictionary definition “having a common border : abutting, touching.”

40. Following the sentence that says “a front side of the door **110** is located adjacent to a backside of the front wheel well **144**,” the specification includes the following sentence: “Alternatively, a portion of the door **110** is located

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

above the front wheel well **144**.” In the context of the specification as a whole, a person of ordinary skill in the art would not interpret those sentences to mean that locating a portion of the door above the front wheel well is a *mutually exclusive* alternative to locating the front side of the door adjacent to the backside of the front wheel well. In other words, a person of ordinary skill in the art would not interpret the “adjacent to” language to exclude every arrangement in which a portion of the door is located above the front wheel well. Further, the “adjacent to” language does not include any requirement that the frontside of the door must be located *behind*—as opposed to in front of—the backside of the front wheel well. A person of ordinary skill in the art would understand that the “adjacent to” language is satisfied as long as the frontside of the door and the backside of the front wheel well are nearby but not touching each other, without regard to whether any portion of the door is located above the front wheel well.

41. The file history of the '084 patent also supports construing “adjacent to” to mean “nearby but not touching.” The patent applicant added the “adjacent to” language to overcome two prior art references that disclose a relatively large gap between the backside of the front wheel well and the frontside of the door. For example, Figure 1 of Hollenback shows a relatively large gap between the frontside of the door 31 and the backside of the front wheel well:

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

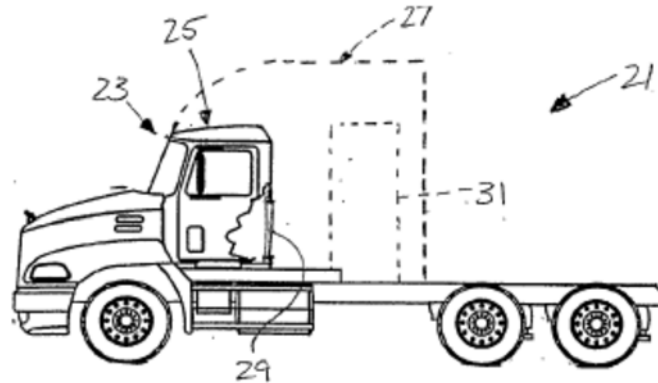


FIG. 1

Ex. 1020, Fig. 1. And Figure 3 of Engelbrecht shows a similarly large gap between the frontside of its door 31 and the backside of the front wheel well:

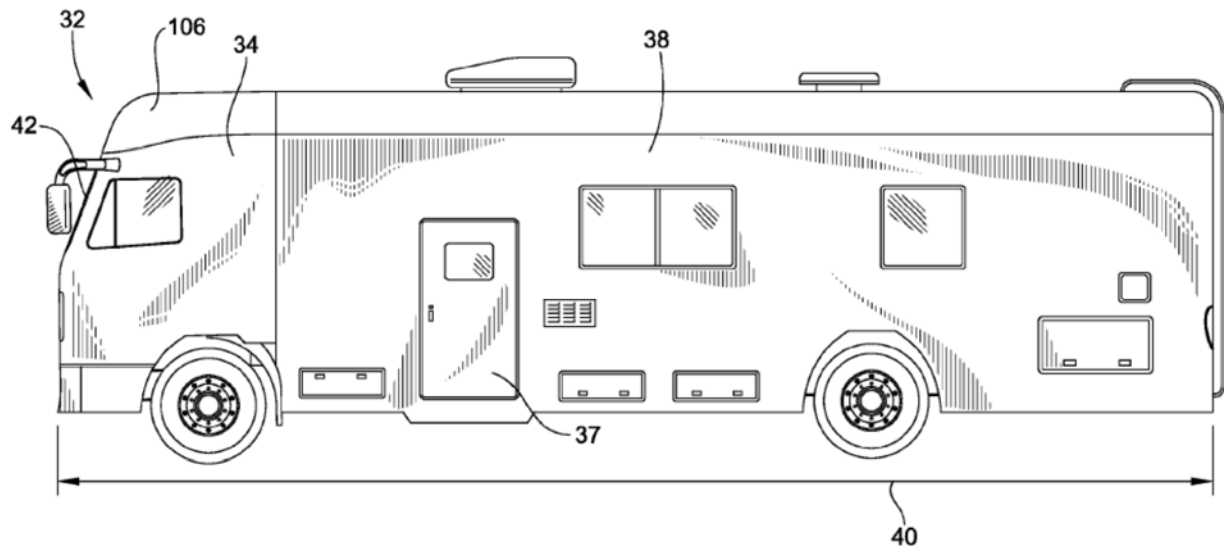


FIG. 3

Ex. 1021, Fig. 3. Accordingly, the addition of the “adjacent to” language overcame these references by requiring a relatively short gap between the frontside of the door and the backside of the front wheel well. There was no need for the “adjacent to” language to take on a more restrictive meaning requiring the

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

frontside of the door and the backside of the front wheel well to actually touch each other.

42. Accordingly, in view of the customary and ordinary meaning of the claim language, the specification, and the file history of the '084 patent, in my view the correct construction of “adjacent to” is “nearby but not touching.”

VII. PATENTABILITY ANALYSIS OF THE '084 PATENT CLAIMS

A. Background and Prior Art Status of the Asserted References

1. The Earliest Effective Filing Date of the '084 Patent

43. As indicated above, while I have not determined the effective filing date of the '084 patent, I have assumed, for purposes of my analysis in this IPR only, that the effective filing date of the '084 patent is December 30, 2015.

2. Modec

44. PCT Application Publication No. WO 2009/001086 A2 to Modec Limited (“Modec,” Ex. 1004) was published on December 31, 2008. Ex. 1004 at 1. I understand that Modec is prior art to the '084 patent.

45. Modec discloses the “electric vehicle 100” illustrated by Modec’s Figure 1, reproduced below:

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

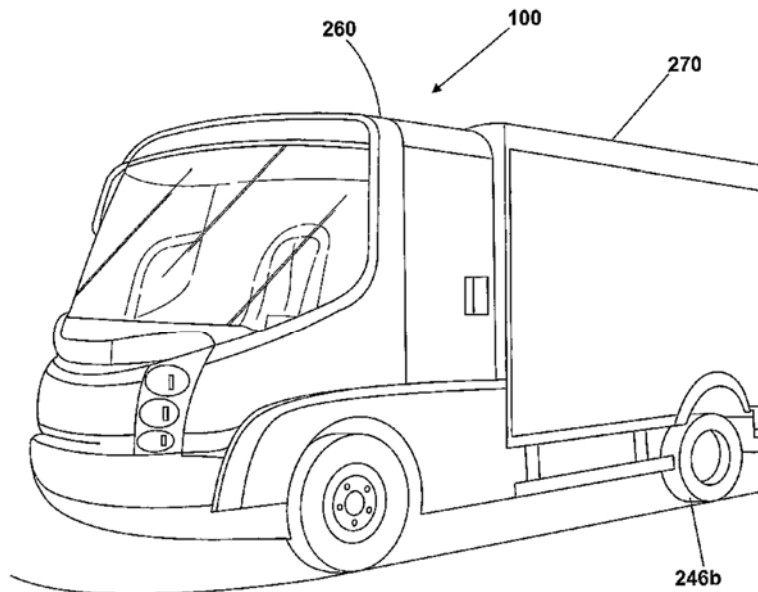


Fig. 1

Ex. 1004, Fig. 1. Figure 1 graphically discloses the relative positioning of the door, seat, and front wheel well. While Figure 1 depicts a “specialist delivery vehicle,” Modec expressly discloses the use of the disclosed door, seat, and wheel well alignment with *any* electric commercial vehicle. *Id.* at 14:30-15:2.

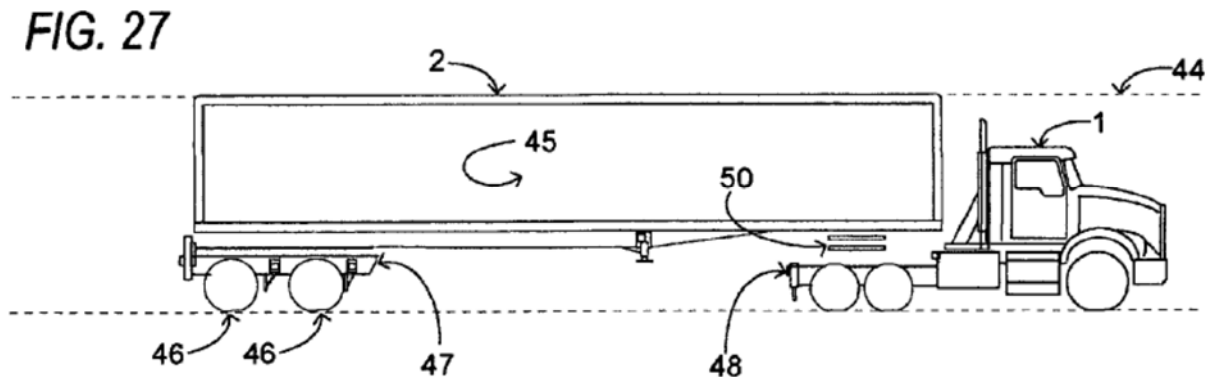
3. Messano

46. U.S. Patent No. 7,338,335 to Messano (“Messano,” Ex. 1005) issued March 4, 2008. Ex. 1005, cover. I understand that Messano is prior art to the ’084 patent.

47. Messano discloses a semi-truck with an electric drive train. Messano specifically discloses that “this present invention is for an electric vehicle which does not have a conventional driveline.” Ex. 1005 at 4:10-11. Messano further discloses “Road-Wheel Modules provide the motive system for the vehicle and

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

vehicle trailers. A Road-Wheel Module consists of an electric drive motor.” *Id.* at 4:26-28. Messano expressly discloses the use of the disclosed electric drive train with a “semi-truck vehicle,” as depicted by Figure 27 of Messano, reproduced below:



Id., Fig. 27. In addition, Messano establishes that it was well known to use an electric drive train with a wide variety of vehicles, including “heavy-duty long-haul vehicles” and “medium and light duty vehicles (trucks, buses, vans, SUVs, recreational vehicles, and the like).” *Id.*, Abstract.

4. Fleet Transport

48. Exhibit 1006 is a true and correct copy of portions of the October 2010 issue of *Fleet Transport* magazine. I am familiar with *Fleet Transport* magazine based on my approximately 40 years of experience in the field of automotive design. *Fleet Transport* magazine is a reputable magazine within the trucking industry that was, during the relevant time, reliably published and made publicly accessible to subscribers and other interested members of the public in the

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

month of the issue indicated on the cover. The cover of Exhibit 1006 includes commercial markings, including the date “Oct 10,” an International Standard Serial Number (“ISSN”), and a price that includes a Value Added Tax (“V.A.T.”), that, in my view, are reliable indicators that Exhibit 1006 is, in fact, the October 2010 issue of *Fleet Transport* magazine that was published and made publicly accessible to subscribers and other interested members of the public in October 2010. I understand that it is the regular practice of publishers to make such markings at the time of publication during the course of the regular conduct of the activity of publication. Therefore, I conclude that Exhibit 1006 (“Fleet Transport”) was published in October 2010 and, thus, I understand that Fleet Transport is prior art to the ’084 patent. In addition, Fleet Transport is a well-respected periodical that is a reliable authority within the relevant field. Further, the information included in Fleet Transport is consistent with my own understanding of what was well known at least as early as October 2010. Accordingly, I relied on Fleet Transport to inform my understanding of what was known to a person of ordinary skill in the art at the relevant time.

49. Fleet Transport graphically discloses a semi-truck with the frontmost side of its frontmost door adjacent to and behind the rearmost portion of the front wheel well, as shown below:

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Ex. 1006 at 1. While the picture does not show the seat, the customary and obvious placement of a seat in a semi-truck is near the front of the windshield. That would put at least part of the seat in front of the rearmost portion of the front wheel well and would put at least a portion of the door behind the seat.

5. Future Truck Report

50. Exhibit 1007 is a true and correct copy of a report entitled “Future Truck Committee Information Report: 2001-2, *Innovation in Future Truck Cab*

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Designs: An Exploration of New Possibilities” was published in March 2001 by The Maintenance Council of the American Trucking Associations. I am familiar with the American Trucking Associations based on my approximately 40 years of experience in the field of automotive design. Exhibit 1007 is an authentic and official report of a council of the well-respected American Trucking Associations that was intended “to provoke discussion and encourage innovation.” The report includes numerous findings and suggestions about truck design that would fulfill the stated purpose of the American Trucking Associations only if the report were published and made accessible to the relevant public. The report includes the marking “Issued: March 2001” and a 2001 copyright notice, together with other markings that, in my view, show that those date markings are reliable indicators that Exhibit 1007 was issued and made accessible to the relevant members of the public in March 2001. I understand that it is the regular practice of publishers to make such markings at the time of publication during the course of the regular conduct of the activity of publication. Therefore, I conclude that Exhibit 1007 (“Future Truck Report”) was published in March 2001 and, thus, I understand that the Future Truck Report is prior art to the ’084 patent. In addition, the Future Truck Report is a report by a well-respected industry association that is a reliable authority in the relevant field. Further, the information included in the Future Truck Report is consistent with my own understanding of what was known to a

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

person of ordinary skill in the art at least as early as March 2001. Accordingly, I relied on the Future Truck Report to inform my understanding of what was known to a person of ordinary skill in the art at the relevant time.

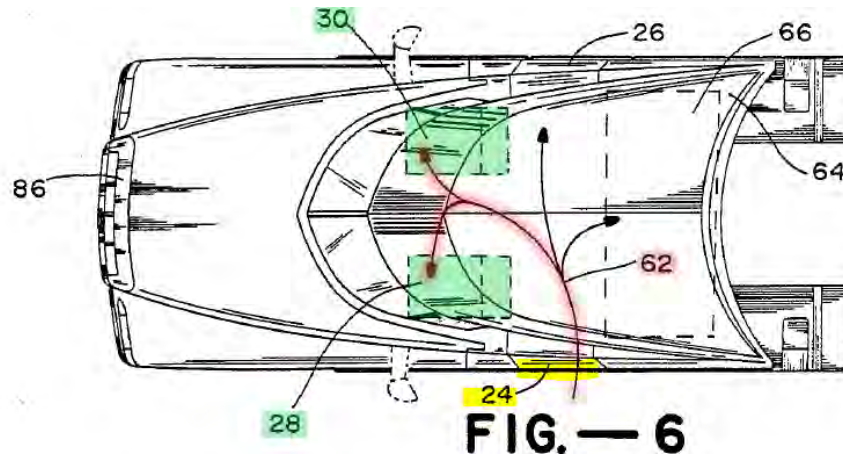
51. The Future Truck Report discloses that the traditional location of semi-truck doors is ergonomically disadvantageous and unsafe, and causes a relatively high level of driver injuries caused by slips. Ex. 1007 at 2-4. The Future Truck Report also suggests that entry into the vehicle could be made easier and safer by positioning the door behind the seat to provide rear entry into the cabin and thus reducing driver injuries caused by slips. *Id.*

6. Marlowe

52. U.S. Patent No. 4,932,716 to Marlowe (“Marlowe,” Ex. 1008) issued June 12, 1990. Ex. 1008, cover. I understand that Marlowe is prior art to the ’084 patent.

53. Marlowe discloses a semi-truck with two seats, doors located behind the seats, a sleeper, and a cab layout that provides access through the cab door to both seats from behind and in between the seats, and to the sleeper, as shown below:

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084



Ex. 1008, Fig. 6 (annotated).

7. Eltra

54. PCT Application Publication No. WO 81/01587 to Eltra Corporation (“Eltra,” Ex. 1009) was published June 11, 1981. Ex. 1009, cover. I understand that Eltra is prior art to the ’084 patent.

55. Eltra discloses a sliding door mounted on three tracks that includes components for opening and closing the door automatically upon initiation by an electrical switch. Ex. 1009 at 1:8-15; 4:12-25.

8. Racz

56. U.S. Patent Application Publication No. 2003/0006628 A1 to Racz (“Racz,” Ex. 1010) was published January 9, 2003. Ex. 1010, cover. I understand that Racz is prior art to the ’084 patent.

57. Racz discloses a semi-truck with a conventional hinged door. Ex. 1010 ¶ [0014].

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

9. Kia

58. Exhibit 1007 is a true and correct copy of the 2013 Kia Sedona User Manual (“Kia”). I am familiar with automotive manuals like Kia based on my approximately 40 years of experience in the field of automotive design, and my experience as an automobile owner. Kia was published at least by the end of 2013 because, as is well known, automobile user manuals are distributed to automobile purchasers as soon as the model is sold and are quickly thereafter available to the general public. Kia also includes a copyright date of 2011, indicating that the manual may have been publicly accessible even before the release of the 2013 Kia Sedona (which, according to standard automobile industry practice, would have been in late 2012). I understand that it is the regular practice of automobile manufacturers to affix date markings on user manuals at the time of publication during the course of the regular conduct of the activity of publication. Accordingly, I understand that Kia is prior art to the ’084 patent. In addition, automobile user manuals including Kia are a well-respected source that is a reliable authority within the relevant field. Further, the information included in Kia is consistent with my own understanding of what was known to a person of ordinary skill in the art at least as early as 2013. Accordingly, I relied on Kia to inform my understanding of what was known to a person of ordinary skill in the art at the relevant time.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

59. Kia discloses an “automatic stop and reversal” feature for a “power sliding door.” Ex. 1011 at 35. Kia explains that this feature will detect resistance to the power sliding door and stop or reverse the closing of the door if a certain level of resistance is detected. *Id.*

10. Plummer

60. U.S. Patent No. 7,145,788 to Plummer (“Plummer,” Ex. 1012) issued December 5, 2006. Ex. 1012, cover. I understand that Plummer is prior art to the ’084 patent.

61. Plummer discloses a semi-truck including a conventional sleeper unit 142, as shown below:

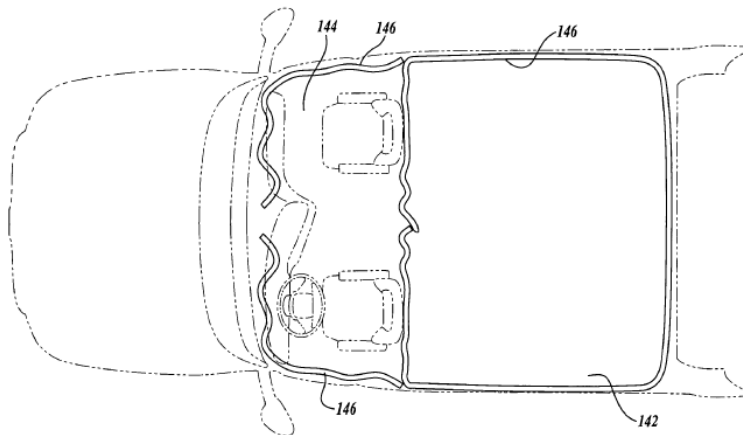


Fig. 5.

Ex. 1012, Fig. 5. Plummer also discloses that long-haul trucks are equipped with “hotel loads” including “heating and air conditioning, lighting, and appliances such as refrigerators, coffee makers and microwave ovens.” *Id.* at 1:15-22.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

11. Man Annual Report

62. Exhibit 1013 is a true and correct copy of an authentic and official annual report publicly filed by the Man Group in 2012. Exhibit 1013 includes indicia and commercial markings that, in my view, reliably indicate that the Man Group publicly filed the report, and, thus, that it was accessible to relevant members of the public, in 2012. *See, e.g.*, Ex. 1013 at 1 (“2012 Annual Report” marking and Man logo). I understand that it is the regular practice of public companies to include such markings at the time of publication (through filing) during the course of the regular conduct of their businesses and the specific activity of filing their annual reports. I also understand that securities laws require annual reports such as the Man Annual Report to be publicly filed. Therefore, I conclude that Exhibit 1013 (“Man Annual Report”) was published in 2012 and, thus, I understand that the Man Annual Report is prior art to the ’084 patent. In addition, security filings of public companies within the relevant field, such as the Man Annual Report, are reliable authorities within the relevant field. Further, the information included in the Man Annual Report is consistent with my own understanding of what was known to a person of ordinary skill in the art at least as early as 2012. Accordingly, I relied on the Man Annual Report to inform my understanding of what was known to a person of ordinary skill in the art at the relevant time.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

63. The Man Annual Report includes pictures of a semi-truck vehicle with a door that is taller than two people pictured near the truck:



Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Ex. 1013 at 8.

12. Freightliner

64. Exhibit 1014 is a true and correct copy of an article entitled “Ergonomics Program at Freightliner” by Josef Loczi, published in SAE Transactions in 2000 or 2001. I am familiar with SAE Transactions based on my approximately 40 years of experience in the field of automotive design. SAE

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Transactions is a well-respected journal of the Society of Automotive Engineers that was, during the relevant time, reliably published and made accessible to the relevant public near the date indicated on each issue. Exhibit 1014 includes indications that the article was published in 2000 or 2001, including a 2000 copyright notice on the article and 2001 copyright notice and International Standard Serial Numbers (“ISSNs”) near the front of the journal in which the article is contained. Ex. 1014 at 2, 10. I understand that it is the regular practice of publishers to make such markings at the time of publication during the course of the regular conduct of the activity of publication. Further, a website maintained by JSTOR, which is known to maintain reliable information about the publication of articles in the regular course of its activities, lists the article as being part of Vol. 109, Section 2: JOURNAL OF COMMERCIAL VEHICLES (2000), pp. 462-469. Exhibit 1018 is a true and correct copy of a printout from the JSTOR webpage, located at <https://www.jstor.org/stable/44650780>, which provides that listing. That webpage currently provides access to images that appear to be the same as pages 10-17 of Exhibit 1014. Exhibit 1019 is a true and correct copy of those images currently accessible from the JSTOR website. Therefore, I conclude that Exhibit 1014 (“Freightliner”) was published in 2000 or 2001 and, thus, I understand that Freightliner is prior art to the ’084 patent. In addition, SAE Transactions is a well-respected journal that is a reliable authority within the relevant field. Further, the

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

information included in Freightliner is consistent with my own understanding of what was known to a person of ordinary skill in the art as early as 2000 or 2001. Accordingly, I relied on Freightliner to inform my understanding of what was known to a person of ordinary skill in the art at the relevant time.

65. Freightliner discloses multiple steps and hand holds for assisting a driver to enter the cabin of a semi-truck, as shown below:



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Ex. 1014 at 14. Below is the same figure from the image of the same page currently accessible at the JSTOR website:

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Ex. 1019 at 5.

B. Ground 1: Claims 1-5, 15-16, and 25 would have been obvious over Modec and Messano

66. For the reasons set forth below, it is my opinion that claims 1-5, 15-16, and 25 of the '084 patent would have been obvious over Modec and Messano.

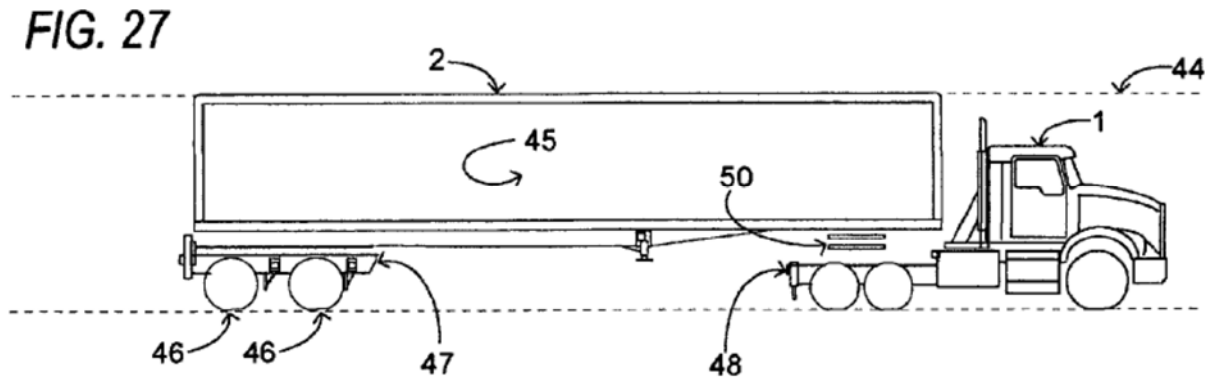
1. Claim 1

a. “A semi-truck vehicle”

67. Modec discloses an “electric vehicle 100” that can be a “specialist delivery vehicle” or “a box van or minibus or any other commercial or domestic use vehicle.” Ex. 1004 at 14:30-15:2. While Modec does not specifically mention a “semi-truck vehicle,” it would have been obvious to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle,” as explained below in Section VII(B)(1)(k).

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

68. In the same field, Messano discloses an electric vehicle that is a “semi-truck vehicle.” Figure 27 of Messano, reproduced below, illustrates “a tractor truck and semi-trailer.” Ex. 1005 at 7:18-19.



b. “an electric drive train”

69. Modec discloses an “electric vehicle 100,” shown in Figure 1, reproduced below.

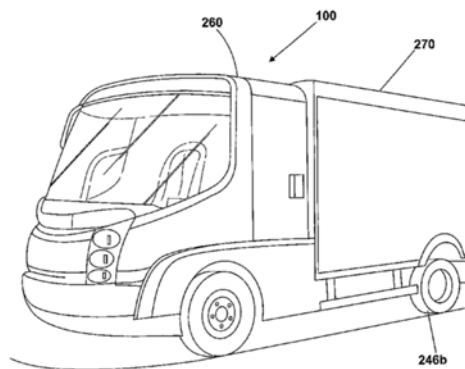


Fig. 1

Ex. 1004 at 14:30; Fig. 1. Modec further discloses: “At [the electric vehicle’s] heart is an electric drive train including an electric motor 200 which is supplied with power from a battery assembly 210.” *Id.* at 15:2-4. Modec also discloses that

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

the invention relates, in particular, “to electric vehicles and to control and security systems that may be fitted to such vehicles,” and further explains that “electric powered vehicles . . . use electrical power sources and electric motors as the heart of their drive train.” *Id.* at 1:7-8, 17-18.

70. Messano also discloses an electric drive train. Messano specifically discloses that “this present invention is for an electric vehicle which does not have a conventional driveline.” Ex. 1005 at 4:10-11. Messano further discloses “Road-Wheel Modules provide the motive system for the vehicle and vehicle trailers. A Road-Wheel Module consists of an electric drive motor.” *Id.* at 4:26-28. The presence of a combustion engine in at least one embodiment of Messano is irrelevant to the “electric drive train” limitation. Because that limitation refers to the drive train only, it does not require the absence of a combustion engine. In fact, dependent claim 3 of the ’084 patent expressly recites “wherein the semi-truck vehicle comprises a combustion engine,” thereby establishing that claim 1 may include a combustion engine in addition to “an electric drive train.”

c. “a body”

71. As would be understood by a person of ordinary skill in the art, all vehicles have “a body.” A skilled artisan would understand that Figure 1 of Modec, reproduced below, illustrates “a body.”

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

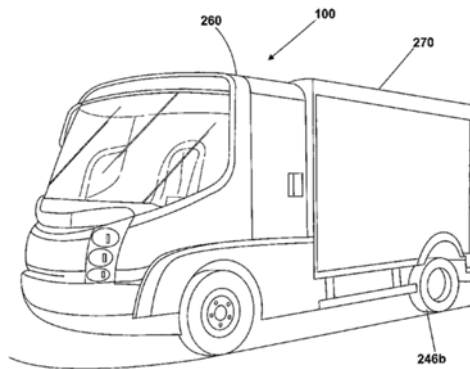


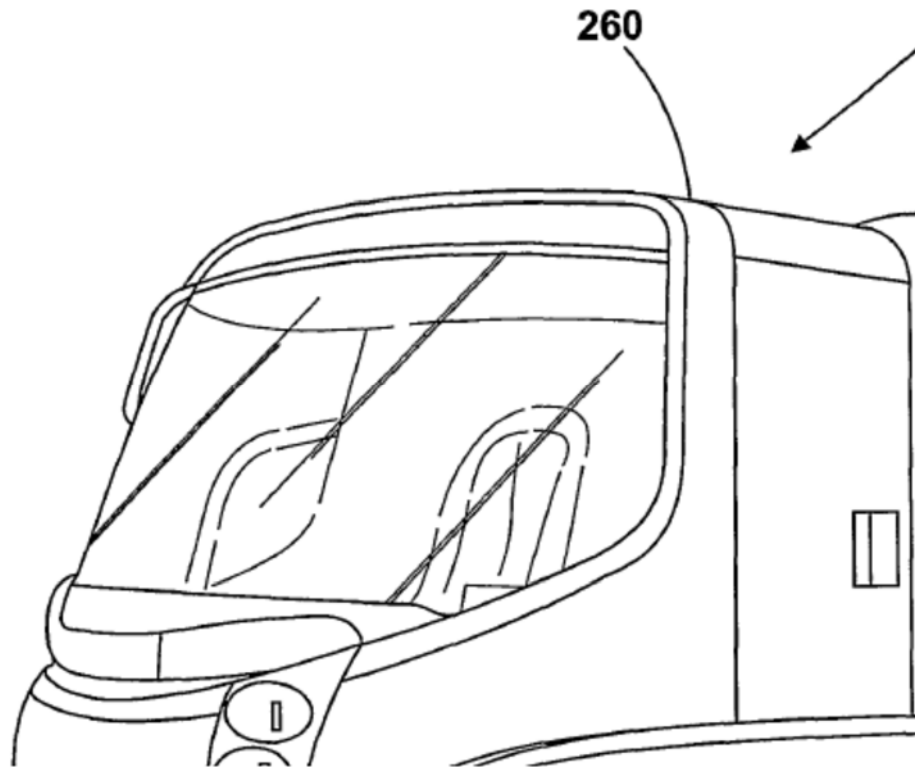
Fig. 1

Ex. 1004, Fig. 1. Modec’s text also expressly discloses “a body.” For example, Modec discloses that electrical pins may “be grounded by connecting them to the *body or chassis* of the vehicle.” *Id.* at 12:13-14 (emphasis added). Modec also discloses: “The vehicle in this example is a specialist delivery vehicle, but through a simple change to the *vehicle body* it could be” *Id.* at 14:30-15:1 (emphasis added).

d. **“a cabin located within the body of the semi-truck vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person”**

72. Modec discloses: “At the front, the *chassis* carries a *cab* 260 in which the *driver sits* and which is protected by a lockable door. As shown the cab has a *driver* and *passenger seat* (not shown).” *Id.* at 15:29-31 (emphases added). As shown by the following blown-up portion, Figure 1 illustrates the cab 260:

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084



Id., Fig. 1. Modec further discloses that a cooling system “keeps the *cabin* at a comfortable ambient temperature.” *Id.* at 15:23-24 (emphasis added). A person of ordinary skill in the art would understand that the terms “cab” and “cabin” are used interchangeably in the art and in Modec’s disclosure.

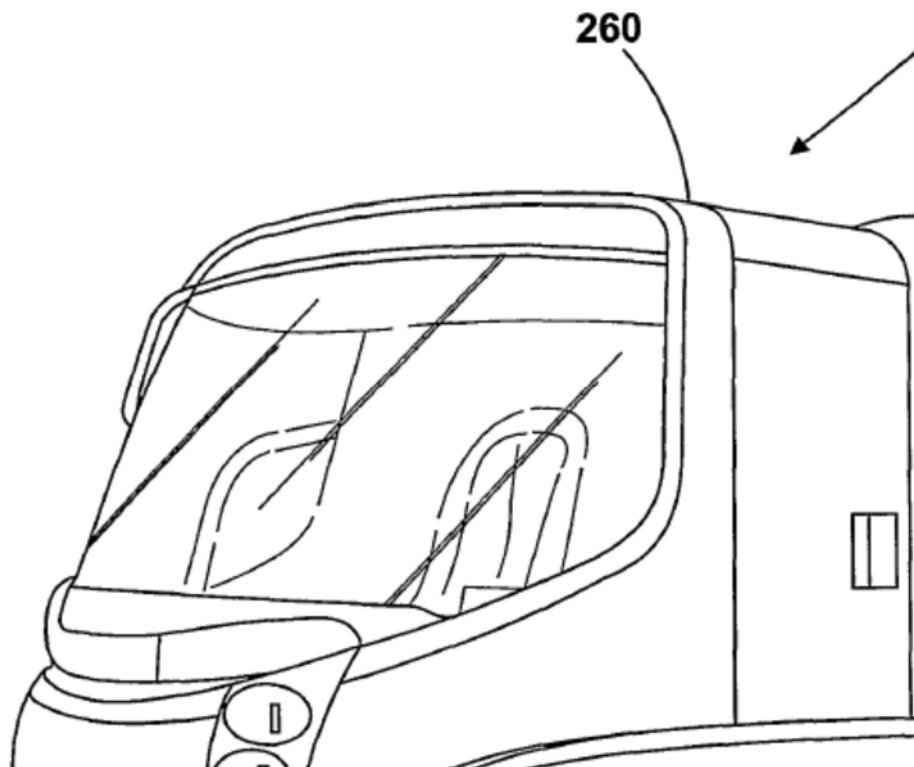
73. Figure 1 and the text of Modec establish that the cab 260 or cabin is “located within the body.” Further, Figure 1 and Modec’s disclosure that the driver sits in the cab and that the cab has a driver seat and a passenger seat establish that “the cabin comprises an interior that is configured to accommodate at least one person.”

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

74. As explained below in Section VII(B)(1)(k), it would have been obvious to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle.”

e. **“a seat located in the interior of the cabin that is configured for seating a user”**

75. Modec discloses: “At the front, the chassis carries a cab 260 in which the *driver sits* and which is protected by a lockable door. As shown the cab has a *driver* and *passenger seat* (not shown).” *Id.* at 15:29-31 (emphases added). Figure 1 shows that the seats are “located in the interior of the cabin.”



Id., Fig. 1. Further, a person of ordinary skill in the art would understand that each of the disclosed driver seat and passenger seat is “configured for seating a user.”

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

In fact, Modec’s express disclosure that the “driver sits” establishes that the driver seat “is configured for seating a user.”

f. **“a door comprising a width extending a horizontal length of the door, wherein the door provides ingress and egress to the interior of the cabin of the semi-truck vehicle”**

76. Modec discloses: “At the front, the chassis carries a cab 260 in which the driver sits and which is protected by a lockable *door*.” *Id.* at 15:29-31 (emphasis added). The annotated blown-up portion of Figure 1, below, shows the disclosed door in yellow.

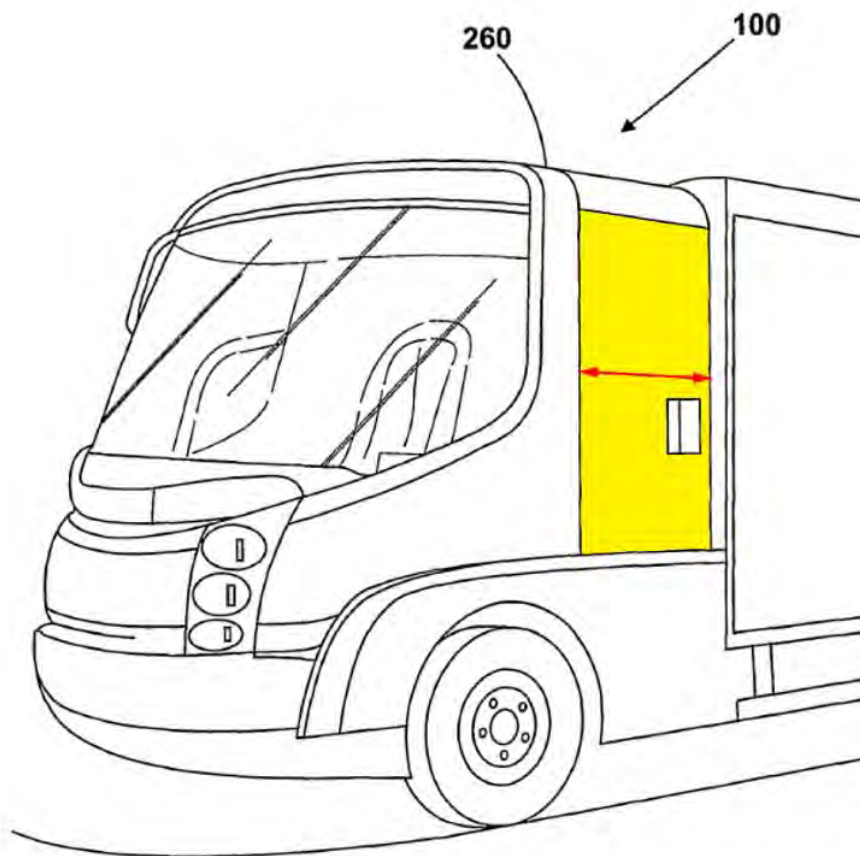


Fig. 1

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

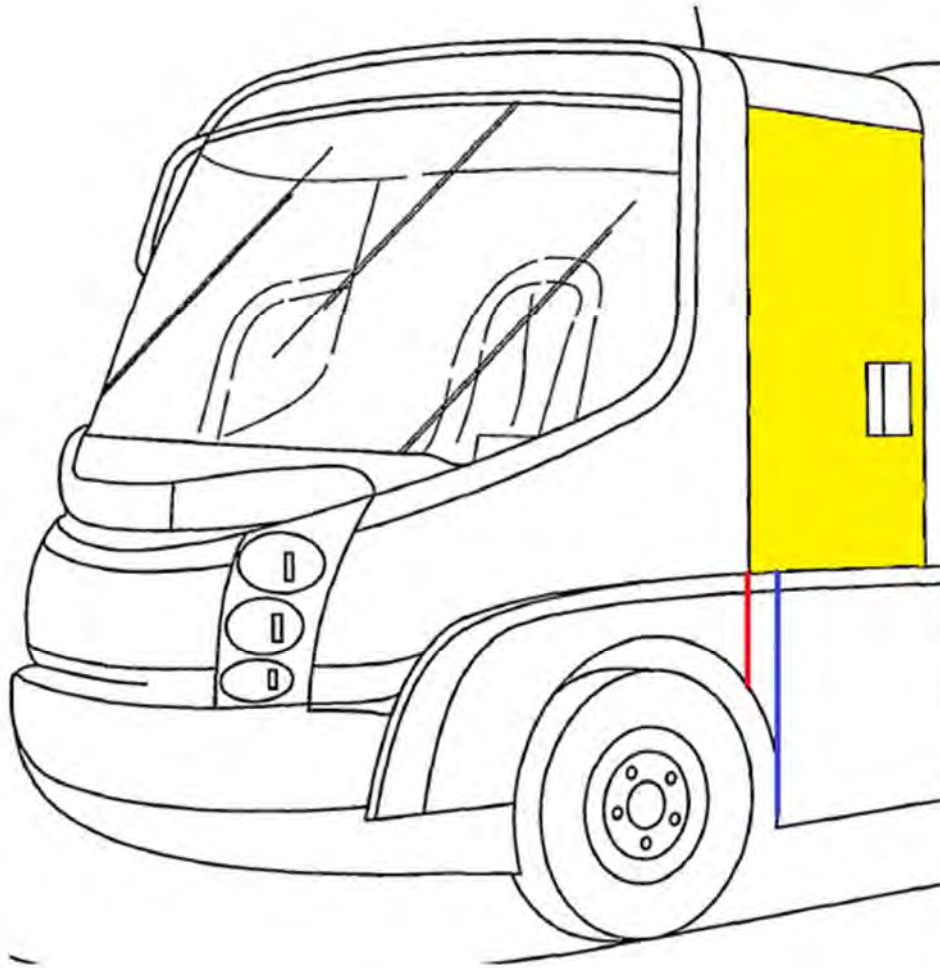
Id., Fig. 1. The red line on the annotated figure shows that the door comprises “a width extending a horizontal length of the door.” Modec further discloses that the door can be unlocked “to allow the driver to access the vehicle through the door” (*id.* at 22:18-20), thereby establishing that “the door provides ingress and egress to the interior of the cabin.”

77. As explained below in Section VII(B)(1)(k), it would have been obvious to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle.”

- g. **“wherein the door is located on the body such that the frontmost side of the door is adjacent to a rearmost portion of a front wheel well”**

78. The following annotated blown-up portion of Figure 1 of Modec shows that “the door [yellow] is located on the body such that the frontmost side of the door [red line extended from frontmost edge] is adjacent to a rearmost portion of a front wheel well [blue line extended from rearmost edge].”

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

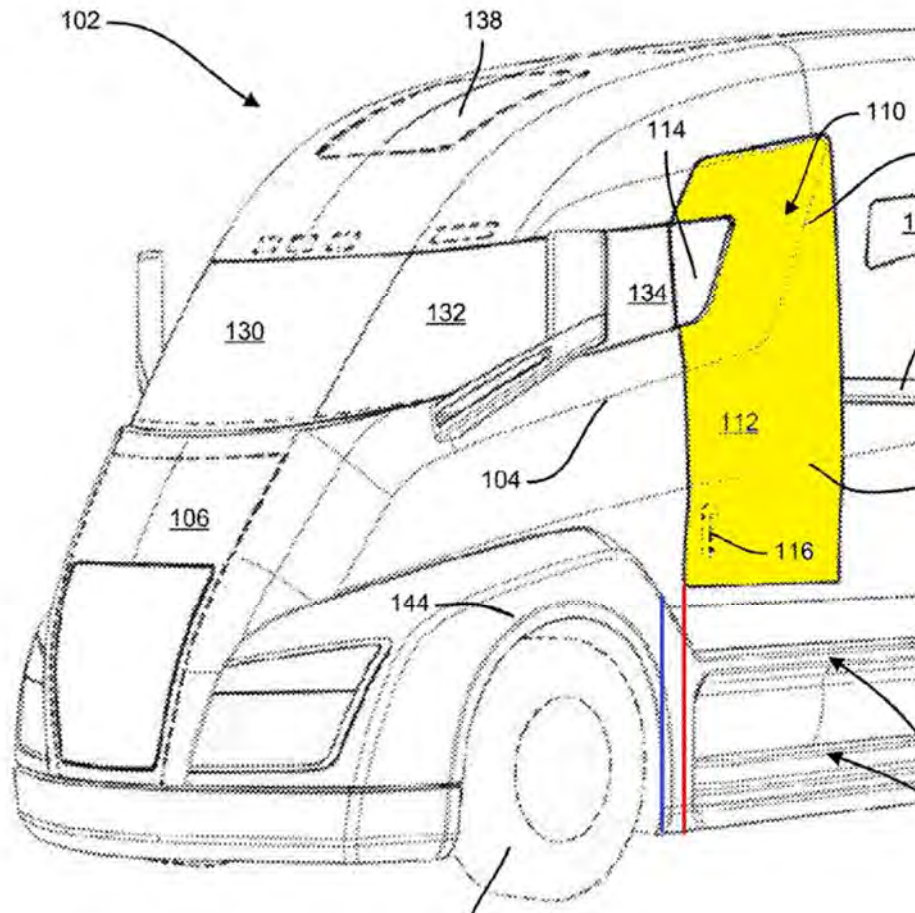


As explained above in Section V(A)(1), “adjacent to” means “nearby but not touching.” The red and blue lines in the annotated figure above show a very small gap between the frontmost side of the door and the rearmost portion of the front wheel well in Modec, and, thus, those components are “nearby but not touching” or “adjacent to” each other.

79. Indeed, the position of the door relative to the front wheel well in Modec is almost identical to the position of those same components in the '084

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

patent, as shown by the following annotated blown-up portion of Figure 1 of the '084 patent.



As explained above, the claim term “adjacent to” does not require the frontmost side of the door to be located horizontally behind the rearmost portion of the wheel well, or *vice-versa*. The “adjacent to” limitation is satisfied as long as those two components are “nearby but not touching,” without regard to whether the frontmost side of the door or the rearmost portion of the wheel well is in the forward-most horizontal position. Accordingly, it is irrelevant that Figure 1 of the '084 patent depicts the frontmost side of the door located horizontally behind the

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

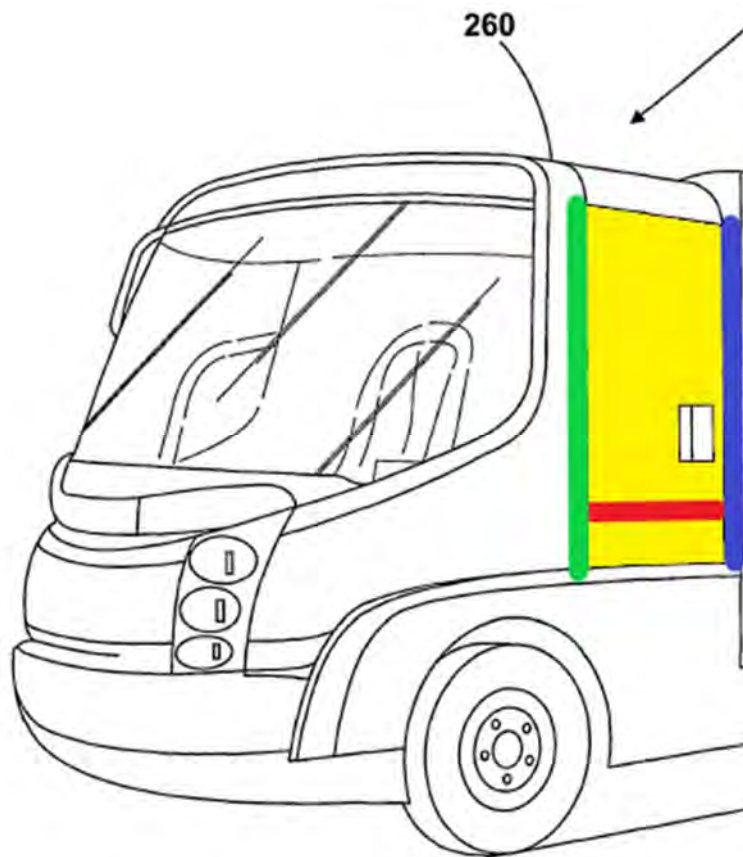
rearmost portion of the wheel well, while Figure 1 of Modec shows the frontmost side of the door located horizontally in front of the rearmost portion of the wheel well.

80. Moreover, even if the “adjacent to” limitation required the frontmost side of the door to be located horizontally behind the rearmost portion of the wheel well, the relative horizontal positioning of those two components would have been a matter of obvious design choice. A person of ordinary skill in the art would understand that, as long as a sufficient portion of the door is located behind the wheel well to enable a person to enter the truck without climbing over the wheel well, there is no significant functional difference between locating the door entirely behind the wheel well and locating a small portion of the door slightly in front of the rearmost portion of the wheel well. Accordingly, a person of ordinary skill in the art would be motivated to locate the door entirely behind the wheel well when an elongated cabin is desired and to locate a portion of the door in front of the rearmost portion of the wheel well when a more condensed cabin is desired. Because semi-trucks generally have relatively elongated cabins, it would have been an obvious design choice to move Modec’s door back slightly to locate the frontmost side of the door horizontally behind the rearmost portion of the wheel well.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

h. “and the width of the door is disposed between the frontmost side of the door and a rearmost side of the door”

81. The annotated blown-up portion of Figure 1, below, shows that “the width [red] of the door [yellow] is disposed between the frontmost side [green] of the door and the rearmost side [blue] of the door.”



Id., Fig. 1.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

- i. “at least a portion of the door being positioned behind the seat and at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well such that the door opens to provide ingress and egress into the cabin from a backside of the seat”

82. The following annotated Figure 1 of Modec shows that “at least a portion of the door [yellow]” is “positioned behind the seat [green] and at least a portion of the seat [green] is disposed to be forward of a line defining the rearmost portion of the wheel well [blue line extended from rearmost edge].”

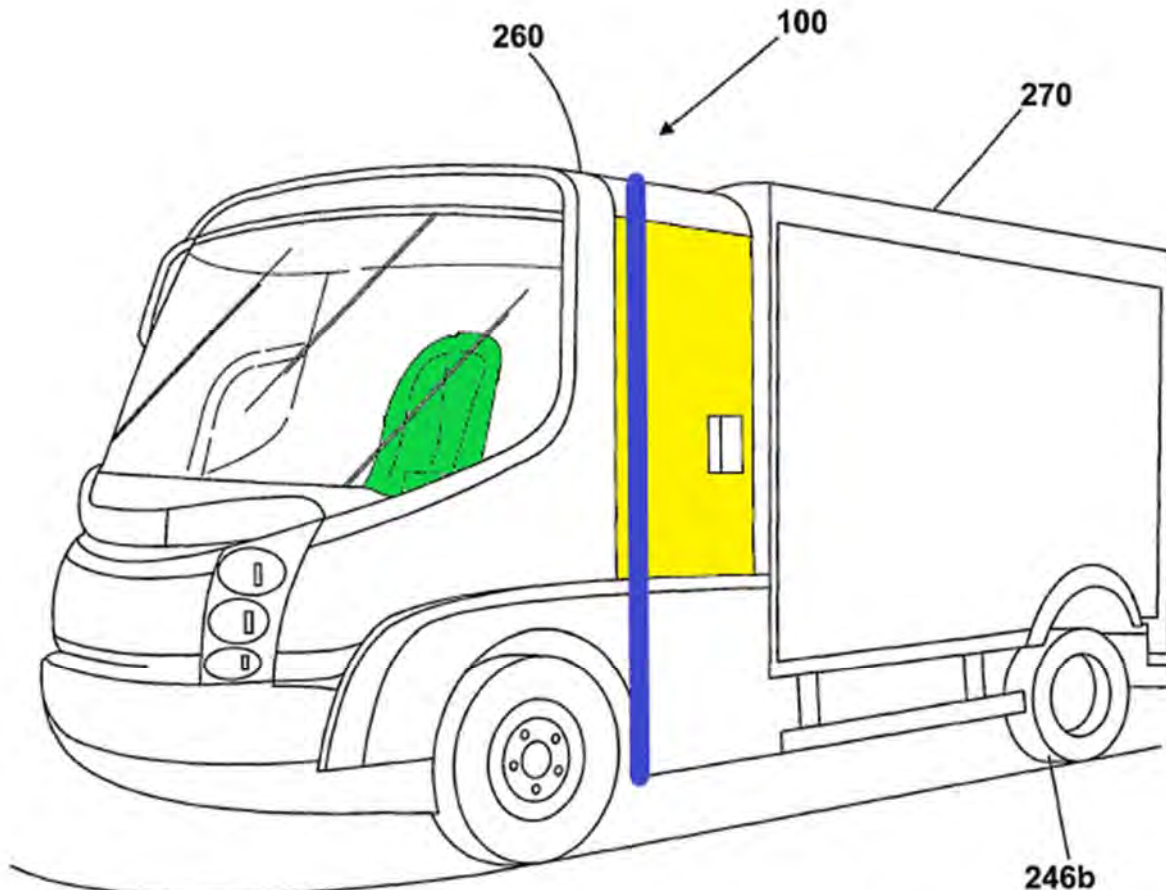


Fig. 1

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

83. Modec further discloses that the door can be unlocked “to allow the driver to access the vehicle through the door” (*id.* at 22:18-20), thereby establishing that “the door opens to provide ingress and egress into the cabin.” As explained above, the door is positioned behind the seat. Therefore, ingress and egress into the cabin, as provided by the door, can only be “from a backside of the seat.”

j. **“wherein the door is the foremost door providing ingress or egress into the interior of the cabin.”**

84. The following annotated Figure 1 of Modec shows that “the door [yellow] is the foremost door.” Modec further discloses that the door can be unlocked “to allow the driver to access the vehicle through the door” (*id.* at 22:18-20), thereby establishing that the door is “providing ingress or egress into the interior of the cabin.”

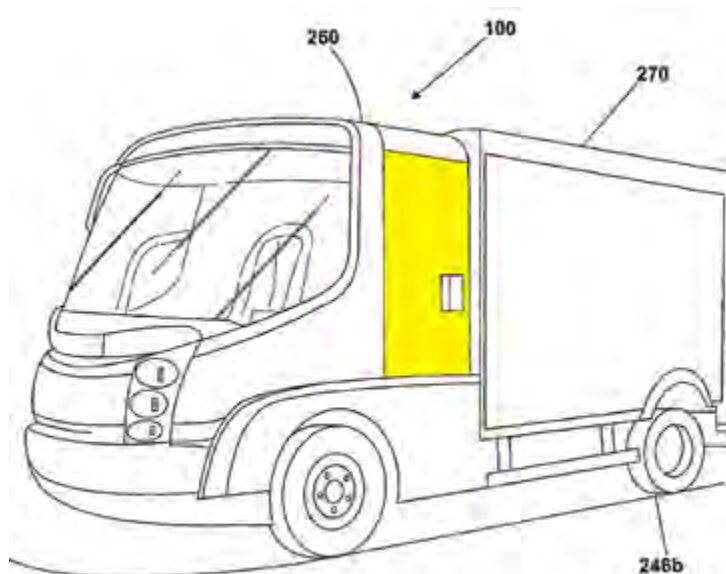


Fig. 1

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

- k. **A person of ordinary skill in the art would have found it obvious, and would have been motivated, to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle.”**

85. As set forth above, claim 1 of the ’084 patent may differ from Modec because Modec does not expressly identify its “electric vehicle 100” as a “semi-truck vehicle.” This is not a patentable distinction, however, because a person of ordinary skill in the art at the time of the alleged invention would have found it obvious to use Modec’s disclosed positioning of the door, seat, and front wheel well with a “semi-truck vehicle.”

86. It would have been obvious to use Modec with a “semi-truck vehicle” in view of Modec alone. Figure 1 of Modec depicts “a specialist delivery vehicle.” *Id.* at 14:30-31. However, Modec discloses that “through a *simple change* to the vehicle body,” the vehicle could be a box van or minibus or *any other commercial* or domestic use *vehicle*.” *Id.* at 14:30-15:2 (emphases added). A person of ordinary skill in the art would understand that a “semi-truck vehicle” is a “commercial vehicle,” and, thus, that “a simple change to the vehicle body” would adapt the configuration shown for Modec for use with a “semi-truck vehicle.” Moreover, even if a person of ordinary skill in the art did not consider a “semi-truck vehicle” to be the type of “commercial vehicle” contemplated by Modec, the express teaching that a simple change to the vehicle body would adapt Modec for

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

use with other vehicle types would motivate a person of ordinary skill in the art to consider other vehicle types, even beyond those expressly disclosed, with which Modec’s relative positioning of the door, seat, and front wheel well could be used advantageously.

87. Further, even if it were not obvious to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle” in view of Modec alone, it would have been obvious to do so in view of Modec in combination with Messano. Modec expressly discloses that “a simple change to the vehicle body” would adapt Modec for use with other vehicle types. Within the same field of electric vehicles, Messano expressly discloses that an electric drive train can be used with a wide variety of vehicles, including “heavy-duty long-haul vehicles” and “medium and light duty vehicles (trucks, buses, vans, SUVs, recreational vehicles, and the like).” *Id.*, Abstract. Those disclosures would motivate a person of ordinary skill in the art to consider “semi-truck vehicles” to be among vehicle types with which Modec’s relative positioning of the door, seat, and front wheel well could be used advantageously.

88. A person of ordinary skill in the art would also be motivated by the understanding that Modec’s relative positioning would be advantageous for a “semi-truck vehicle” because it would allow a driver to more easily and safely enter and exit the “semi-truck vehicle.” The person of ordinary skill in the art

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

would be well aware of this advantage for at least three reasons. First, a person of ordinary skill in the art would have personal knowledge, based on experience using or testing the different door, seat, and wheel well positions in the prior art, that it is easier and requires less dangerous movement to enter the cabin of a vehicle in which the relative positioning of the door, seat, and front wheel well allows for entry into the cabin from behind the seat rather than requiring climbing directly into the seat. Second, a person of ordinary skill in the art would be aware of the express teaching of the 2001 American Trucking Associations report that positioning the door behind the seat to provide rear entry into the cabin would make entry into the vehicle easier and increase safety by reducing driver injuries caused by slips. Ex. 1007 at 2-4. Third, a person of ordinary skill in the art would be aware of the general knowledge within the industry, as shown by Applicants' admission in the background section of the '084 patent, that climbing directly into a semi-truck seat, as required by the traditional positioning of the door, seat, and front wheel well, may be uncomfortable and dangerous.

89. A person of ordinary skill in the art would be even more motivated to use the relative positioning of the door, seat, and front wheel well disclosed by Modec for a "semi-truck vehicle" than for smaller vehicles like delivery trucks or vans. The reason for this enhanced motivation is that the advantages of increased comfort and safety are even more significant for larger vehicles such as "semi-

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

trucks” because the need to climb directly up into the seat is more of an inconvenience and danger for a larger vehicle than for a smaller vehicle.

90. Finally, a person of ordinary skill in the art would have an expectation of success in modifying Modec for use with a “semi-truck vehicle.” A person of ordinary skill in the art would understand that Modec’s relative positioning of the door, seat, and front wheel well is a simple layout choice that could easily be implemented for any type of vehicle regardless of size or other physical differences. A person of ordinary skill in the art would further understand that nothing beyond mere resizing of the various cabin components would be necessary to modify Modec for use with “a semi-truck vehicle” and that there would be no technical or other obstacles to making that modification.

91. In summary, modifying Modec to use its disclosed relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle” would meet every claim limitation, a person of ordinary skill in the art would have had a motivation or reason to make the modification, and a person of ordinary skill in the art would have expected success and not encountered any technical or other obstacle to making the combination. Therefore, it would have been obvious to modify Modec for use with a “semi-truck vehicle.” Because such modification would include every claim limitation, claim 1 would have been obvious.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

2. **Claim 2: “wherein the semi-truck vehicle is an electric vehicle comprising a battery pack that is coupled to an electric drive train.”**

92. Modec discloses: “At [the electric vehicle’s] heart is an electric drive train including an electric motor 200 which is supplied with power from a battery assembly 210.” Ex. 1004 at 15:2-4. Modec also discloses that: “The battery assembly 210 comprises a self contained unit that comprises 10 battery cells, battery control circuitry for regulating the battery charge and voltage, and a set of contactors which selectively connect the batteries to the units output terminals or isolate them.” A person of ordinary skill in the art would understand that a “battery assembly” is a “battery pack,” and, thus, Modec discloses “an electric vehicle comprising a battery pack that is coupled to an electric drive train.”

93. Further, it would have been obvious to a person of ordinary skill in the art to couple the electric drive train of Claim 1 to a battery pack in view of Modec in combination with Messano. Messano discloses a “Battery Module” which “may consist of batteries, capacitors, or any combination thereof where electrical energy is stored.” Ex. 1005 at 4:16-19. Messano discloses that the truck’s “electric motors receive power from the Battery Modules and optionally from the GenSets.” *Id.* at 4:33-35. A person of ordinary skill in the art would understand that the “Battery Modules” disclosed by Messano are “a battery pack that is coupled to an electric drive train.”

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

94. Moreover, it would have been obvious to a person of ordinary skill in the art to couple the electric drive train of Claim 1 to a battery pack in order to provide power to the electric drive train. Therefore, claim 2 would have been obvious.

3. **Claim 3: “wherein the semitruck vehicle comprises a combustion engine configured to generate power by using combustion energy of fuel” and Claim 25: “wherein the semi-truck vehicle is a hybrid vehicle comprising electrical and combustion components.”**

95. Messano specifically claims “A hybrid semi-trailer truck system comprising: an electric drive road tractor that incorporates: a multiplicity of constant-speed internal combustion engines maximized for fuel efficiency.” *Id.* at 19:28-31. Thus, Messano discloses “a combustion engine configured to generate power by using combustion energy of fuel” (claim 3) and “a hybrid vehicle comprising electrical and combustion components” (claim 25). Therefore, the combination of Modec and Messano meets every limitation of claim 3, and claim 3 would have been obvious.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

4. **Claim 4: “wherein the semitruck vehicle comprises only a single door.”**

96. The following annotated Figure 1 of Modec shows only a single door

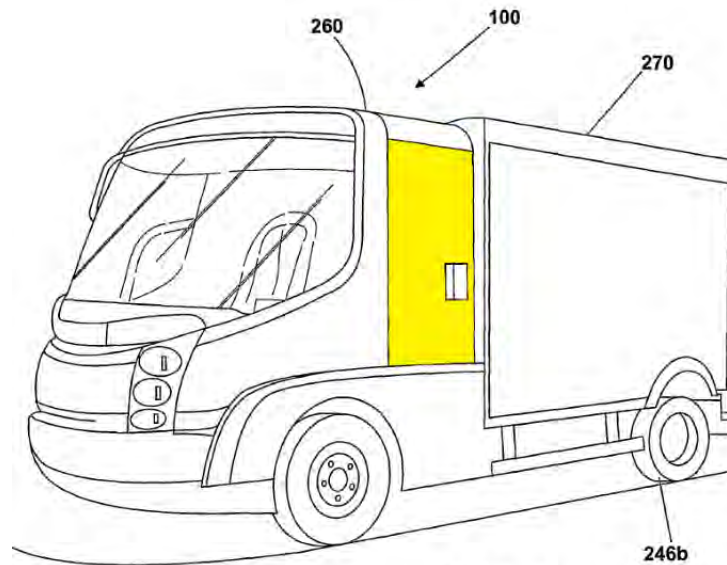


Fig. 1

(yellow).

97. Modec does not disclose the presence of additional doors. Thus, Modec discloses “only a single door.” Even if Modec discloses an alternative embodiment of having two doors, it discloses the alternative of having “only a single door.” Therefore, the combination of Modec and Messano meets every limitation of claim 4, and claim 4 would have been obvious.

5. **Claim 5: “wherein the single door is located on a left side when the user is seated in the seat of the semi-truck vehicle.”**

98. As shown in the previous figure, Modec shows “a single door” (yellow) that is located on the left side of the truck when the user is seated in the

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

seat. Therefore, the combination of Modec and Messano meets every limitation of claim 5, and claim 5 would have been obvious.

6. Claim 15: “wherein the vehicle is an electric driven class 7 semi-truck.”

99. As explained above, Messano discloses a “semi-truck vehicle” with an electric drive train. Messano further discloses that “[t]he drive system equally applies to light & medium duty Class 2 to 7 vehicles, motorhomes, amphibians, and automobiles.” *Id.* at 1:41-43. Thus, Messano discloses a semi-truck vehicle “wherein the vehicle is an electric driven class 7 semi-truck.” Therefore, the combination of Modec and Messano meets every limitation of claim 15, and claim 15 would have been obvious.

7. Claim 16: “wherein the vehicle is an electric driven class 8 semi-truck.”

100. As explained above, Messano discloses a “semi-truck vehicle” with an electric drive train. Messano further discloses that “[t]he present invention relates [...] more particularly, to a fuel efficient heavy-duty Class 8 long-haul vehicle.” *Id.* at 1:33-36. Thus, Messano discloses a semi-truck vehicle “wherein the vehicle is an electric driven class 8 semi-truck.” Therefore, the combination of Modec and Messano meets every limitation of claim 16, and claim 16 would have been obvious.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

C. Ground 2: Claim 6 would have been obvious over Modec, Messano, and the Future Truck Report

101. Claim 6, which depends from claim 4 and recites the additional limitation “wherein the single door is located on the right side when the user is seated in the seat of the semi-truck vehicle,” would have been obvious over either Modec and Messano or Modec, Messano, and the Future Truck Report. While Modec illustrates “a single door” (yellow in annotated Figure 1, shown previously) “located on the left side of the truck,” it would have been obvious to one of ordinary skill in the art to instead locate the door on the right side, as an obvious matter of design choice. There are finite options for locating a single door, including, primarily, locating the door on the left side and locating the door on the right side, and a person of ordinary skill in the art would understand that either of those choices would successfully allow a person to enter and exit the truck. Further, a person of ordinary skill would have appreciated that locating the door on the right side would eliminate the need for the driver to enter and exit on the left side of the vehicle, which would eliminate the driver’s exposure to passing road traffic during ingress and egress. A person of ordinary skill in the art would also have appreciated that a door on the driver’s side weakens the cab structure and restricts the size of the driver’s side window. Therefore, a cab design with no driver’s side door increases the cab strength and would allow for a larger driver’s side window, increasing safety and visibility. The Future Truck Report expressly

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

discloses the foregoing motivations for locating a single door on the right side. Thus, it would have been an obvious design choice to have a single door in the cab located on the right (passenger) side.

102. Even if not obvious in view of Modec and Messano alone, the Future Truck Report discloses a “single door located on the right side when the user is seated in the seat of the semi-truck vehicle,” and it would have been obvious to combine Modec and Messano with the Future Truck Report. The Future Truck Report discloses that, “[e]ntry could be by a door at the right rear of the passenger side, eliminating the door on the driver’s side” and explains that this position “would eliminate the need for retractable steps/stairs and for doors opening into traffic. For on-highway use there is little need for a driver to have ready entry and exit provided by a door on his immediate left.” Ex. 1007 at 3. The Future Truck Report also explains that a door weakens the cab structure and restricts the cab window size. *Id.* A person of ordinary skill in the art would know to combine Modec and Messano with the Future Truck Report because the Future Truck Report explicitly suggests designers consider making the disclosed changes to conventional truck designs. For example, the Future Truck Report states that, “[t]he authors ... advocate spirited debate and serious consideration of the value of these changes to cab design.” *Id.* at 1.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

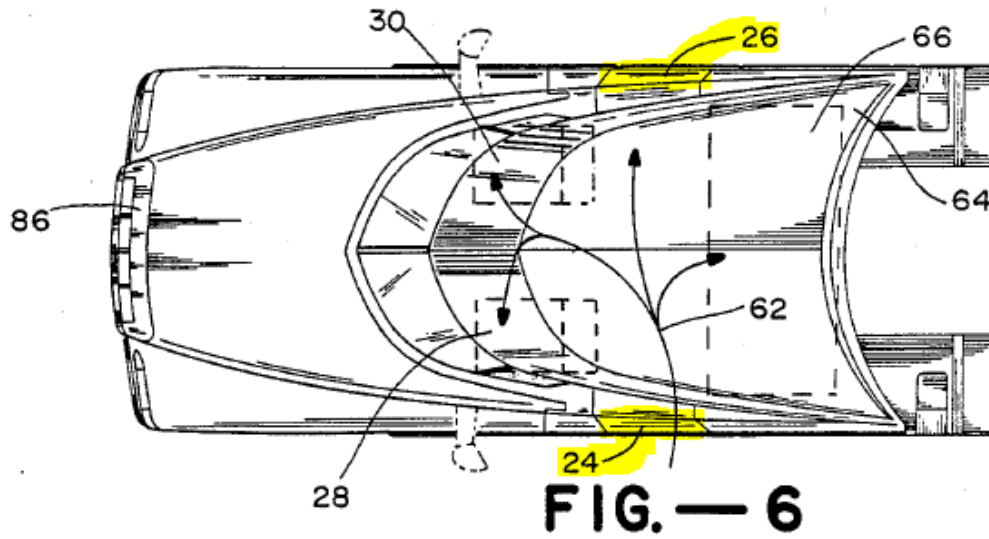
D. Ground 3: Claims 7, 8, 21, and 26 would have been obvious over Modec, Messano, and Marlowe

1. Claim 7: “wherein the door of the semi-truck vehicle comprises a first door and a second door.”

103. It would have been obvious to one of skill in the art to modify the cabin of Modec to have a first door and a second door. In fact, it is customary for semi-truck vehicles and other trucks to have at least two doors, a driver-side door and a passenger-side door. A person of ordinary skill in the art would recognize that it is advantageous to have at least two doors for convenience, to provide separate entryways for the driver and the passenger, and for safety, to provide multiple points of ingress and egress in case of an emergency.

104. Even if this limitation were not obvious in view of Modec and Messano alone, it would have been obvious in view of Modec, Messano, and Marlowe. Marlowe discloses a “class 7 or 8 truck,” that includes a cab having driver and passenger doors.” Exhibit 1008 at 1:6-10. A person of ordinary skill in the art would understand that a class 8 truck is “a semi-truck vehicle.” Marlowe thus expressly discloses a “semi-truck vehicle [comprising] a first door and a second door,” as shown by Figure 6 from Marlowe, reproduced below, which shows “opposite driver and passenger doors **24** and **26**, respectively.” Ex. 1008 at 3:1-2; Figure 6. Accordingly, claim 7 would have been obvious.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084



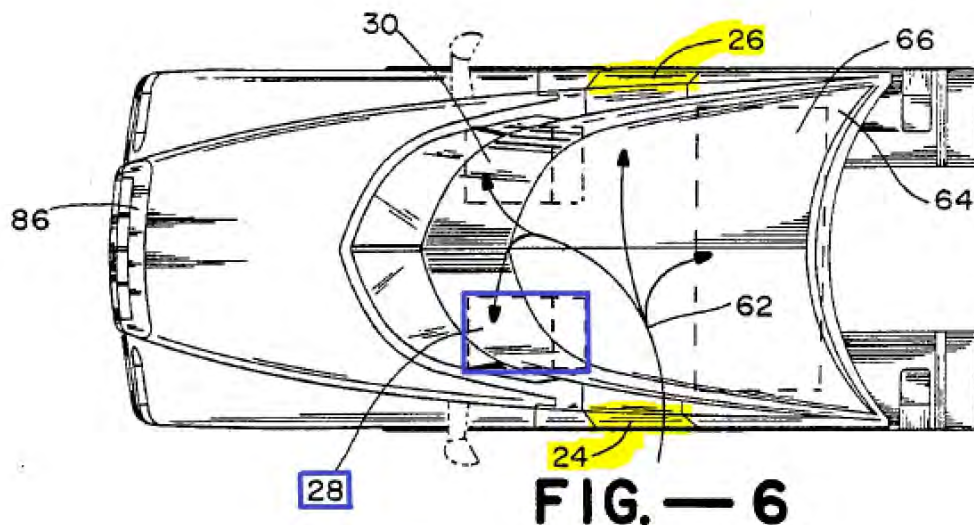
2. **Claim 8: “wherein the first door is located on a left side when the user is seated in the seat of the semi-truck vehicle and the second door is located on a right side when the user is seated in the seat of the semi-truck vehicle.”**

105. It would have been obvious to one of skill in the art to modify the cabin of Modec to have a first door on the left side and a second door on the right side. Indeed, a person of ordinary skill in the art would recognize that as the customary cabin design for a semi-truck vehicle or other truck. A person of ordinary skill in the art would further recognize that it is advantageous to provide separate entryways for the driver and the passenger and to provide multiple points of ingress and egress.

106. Even if this limitation were not obvious in view of Modec and Messano alone, it would have been obvious in view of Modec, Messano, and Marlowe. Marlowe discloses a “class 7 or 8 truck,” that includes a cab having

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

driver and passenger doors.” Exhibit 1008 at 1:6-10. A person of ordinary skill in the art would understand that a class 8 truck is “a semi-truck vehicle.” Figure 6 from Marlowe, reproduced below, shows “opposite driver and passenger doors **24** and **26** [in yellow], respectively.” Ex. 1008 at 3:1-2; Figure 6. Figure 6 also shows “driver and passenger seats **28** [passenger seat outlined in blue] and **30**, respectively.” *Id.*



A person of ordinary skill in the art would understand that the driver seat is where “the user is seated in the seat of the semi-truck vehicle.” As shown in Figure 6, the doors are to the left and right of the driver seat. Thus, Marlowe explicitly discloses the limitation of claim 8. Accordingly, claim 8 would have been obvious.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

3. Claim 21

a. “wherein the cabin comprises a first seat and a second seat, and”

107. As described in Section VII(B)(1)(e), Modec discloses “a seat located in the interior of the cabin that is configured for seating a user.” Thus, Modec discloses the “first seat” required by claim 21. Claim 21 also requires “a second seat” in addition to the “first seat.” Modec discloses both “a driver and a passenger seat (not shown).” Ex. 1004 at 15:30-31. The “passenger seat” of Modec is the “second seat” required by claim 21.

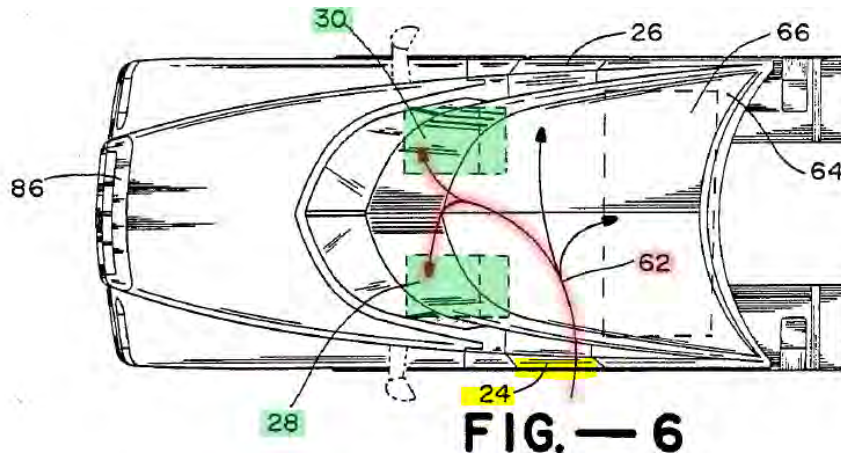
b. “wherein access to either of the first seat or the second seat is provided between the second seat and the first seat.”

108. It would have been obvious to a person of ordinary skill in the art to modify the cabin of Modec and Messano to comprise a first seat and a second seat wherein access to either of the first seat or the second seat is provided between the second seat and the first seat. A person of ordinary skill in the art would have known that if the cabin comprised two seats, and the door was located behind the seats, access to the seats would be provided between the first and second seat. Therefore, Claim 21 would have been obvious over Modec and Messano.

109. Even if it was not obvious over Modec and Messano alone, it would have been obvious to a person of ordinary skill in the art to modify the cabin of Modec and Messano to comprise a first seat and a second seat, wherein access to

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

either of the first seat or the second seat is provided between the second seat and the first seat, as disclosed in Marlowe. Figure 6 of Marlowe, reproduced below, shows “driver and passenger seats 28 and 30 [green], respectively.” Ex. 1008 at 3:2-3.



Ex. 1008, Fig. 6. Figure 6 shows “driver and passenger doors 24 [yellow] and 26 are located rearwardly of driver and passenger seats 28 and 30 [green] so as not to obstruct access into and out of the cab, as depicted by arrow 62 [red].” *Id.* at 5:35-40. Arrow 62 shows that entry through the door (24) into the cabin provides access to the seats from between the seats. *Id.*, Fig. 6. A person of ordinary skill in the art would be motivated to incorporate Marlowe’s design into Modec because they would know that providing a single, central aisle for accessing both seats conserves more space in the cab than providing two separate pathways. Accordingly, claim 21 would have been obvious.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

4. Claim 26

a. “A semi-truck vehicle”

110. This limitation is identical to the limitation of claim 1 discussed above in Sections VII(B)(1)(a) and VII(B)(1)(k) and is disclosed or would have been obvious for the same reasons set forth above.

b. “an electric drive train”

111. This limitation is identical to the limitation of claim 1 discussed above in Section VII(B)(1)(b) and is disclosed or would have been obvious for the same reasons set forth above.

c. “a body”

112. This limitation is identical to the limitation of claim 1 discussed above in Section VII(B)(1)(c) and is disclosed or would have been obvious for the same reasons set forth above.

d. “a cabin located within the body of the vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person”

113. This limitation is identical to the limitation of claim 1 discussed above in Section VII(B)(1)(d) is disclosed or would have been obvious for the same reasons set forth above.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

e. **“a first seat and a second seat located in the interior of the cabin”**

114. For the reasons set forth above with respect to claim 21, Modec discloses both “a driver and a passenger seat (not shown).” Ex. 1004 at 15:30-31. The “passenger seat” of Modec is the “second seat” required by claim 26.

f. **“a door that provides ingress and egress to the interior of the cabin”**

115. Modec discloses this limitation for the same reasons set forth above in Section VII(B)(1)(f).

g. **“the door being located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well”**

116. This limitation is identical to the limitation of claim 1 discussed above in Section VII(B)(1)(g) and is disclosed or would have been obvious for the same reasons set forth above.

h. **“and at least a portion of the door being positioned behind the first seat, at least a portion of the first seat is disposed to be forward of a line defining the rearmost portion of the front wheel well”**

117. This limitation is essentially identical to the limitation of claim 1 discussed above in Section VII(B)(1)(h), except the limitation of claim 1 recites “the seat” instead of “the first seat” and includes the additional language “such that the door opens to provide ingress and egress into the cabin from the backside of the seat.” Modec discloses this limitation for the same reasons set forth above in

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Section VII(B)(1)(h), with Modec’s driver seat being the “first seat” required by claim 26.

- i. **an entryway provided between the first seat and the second seat, wherein the entryway comprises a vertical height extending from a floor of the cabin to at least a top of the first seat or the second seat;**

118. The annotated Figure 1 of Modec shown below illustrates why a person of ordinary skill in the art would understand that Modec implicitly discloses an “entryway provided between the first seat and the second seat, wherein the entryway comprises a vertical height extending from a floor of the cabin to at least a top of the first seat or the second seat.”

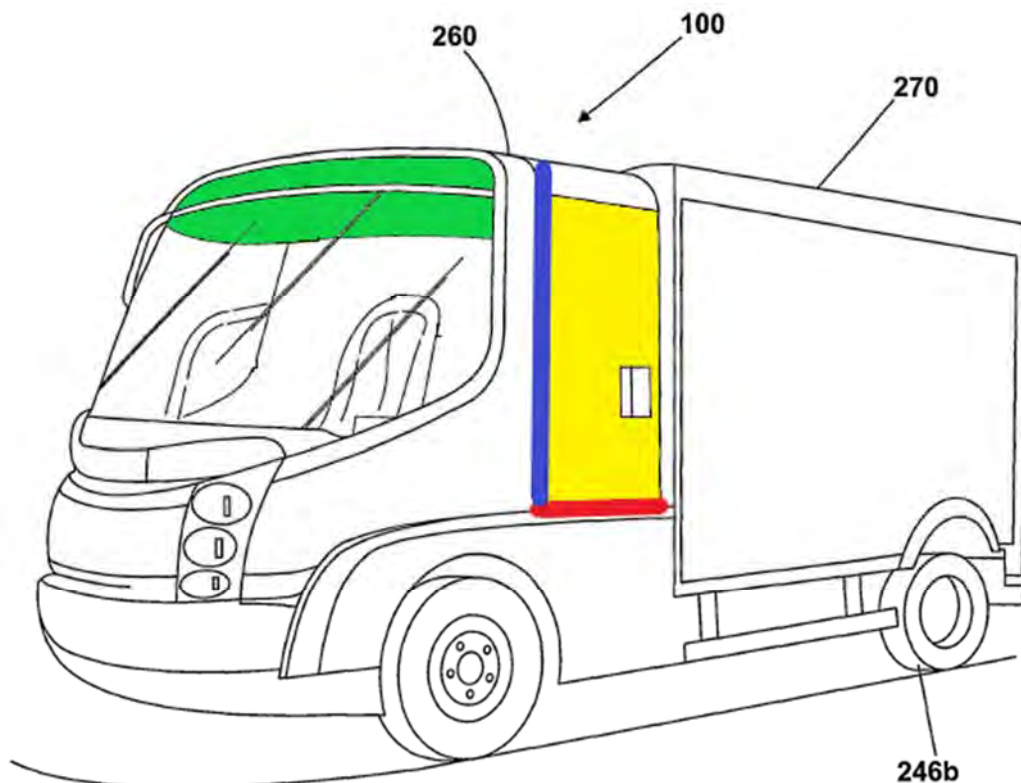


Fig. 1

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

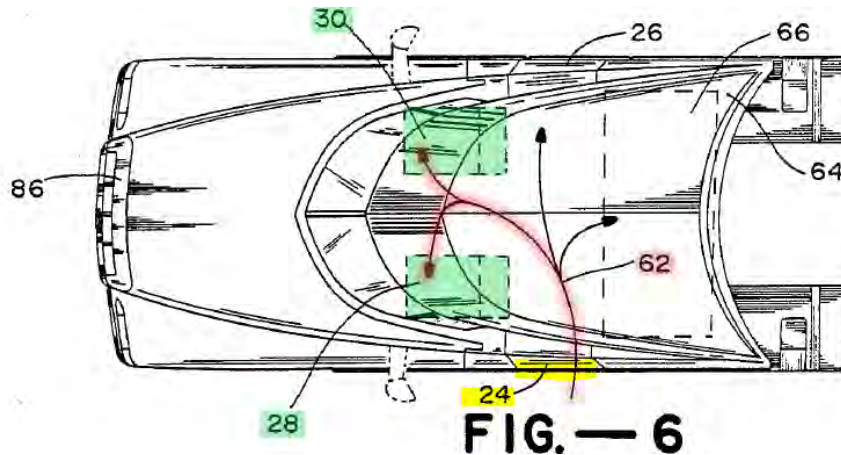
As shown above, Modec graphically discloses a ceiling (green) of the cabin that is above the seat and the space behind the seat. A person of ordinary skill in the art would understand that the door (yellow) must open up to reveal a floor on the other side of the door, at about the level of the lower edge (red) of the door, to prevent the driver from falling through to the undercarriage of the vehicle. Because the door is at least partially behind the seat, a person of ordinary skill in the art would also understand that there is an entryway behind and between the two seats that extends vertically from the floor (red) to the ceiling (green) of the cabin, which, as shown, is above the seat. Therefore, Modec implicitly discloses “an entryway provided between the first seat and the second seat wherein the entryway comprises a vertical height extending from a floor of the cabin to at least a top of the first seat or the second seat.”

119. Further, it would have been obvious, in view of Modec’s disclosure of a door located behind the driver seat, to provide an entryway behind and between the two seats that extends vertically from the floor (red) to the ceiling (green) of the cabin, which, as shown, is above the seat as the most convenient and easiest pathway for the driver to get from the door to the driver seat upon entering the cabin.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

- j. **“wherein the entryway provides access to either of the first seat or the second seat.”**

120. As explained above with respect to claim 21, Marlowe discloses a pathway from the door to either one of the first seat or the second seat:



Ex. 1008, Fig. 6. A person of ordinary skill in the art would be motivated to incorporate Marlowe’s design into Modec because they would understand that providing a single, central aisle for accessing both seats conserves more space in the cab than providing two separate pathways.

- k. **It would have been obvious, and a person of ordinary skill in the art would have been motivated, to use Modec’s relative positioning of the door, seat, and front wheel well with a “semi-truck vehicle.”**

121. For the same reasons set forth above in Section VII(B)(1) with respect to claim 1, a person of ordinary skill in the art would have found it obvious, and would have been motivated, to use Modec’s disclosed positioning of the door, seat,

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

and front wheel well with a “semi-truck vehicle.” Therefore, claim 26 of the ’084 patent would have been obvious.

E. Ground 4: Claims 9-11 would have been obvious over Modec, Messano, and Eltra

1. Claim 9: “wherein the door slides on an upper track, a mid-track, and a lower track located externally on the body of the semi-truck vehicle to open and close the door.”

122. It would have been obvious to one of ordinary skill in the art to modify the cabin of Modec and Messano to use a sliding door, as disclosed in Eltra, that “slides on an upper track, a mid-track, and a lower track located externally on the body of the semi-truck vehicle to open and close the door.” Eltra discloses “sliding doors provided on the passenger side of conventional motor vehicles.” Exhibit 1009 at 1:4-5. Eltra discloses that, “[s]uch a [sliding] door is supported at three points, two support points having fixed arms which ride in tracks provided in the vehicle body. [...] The third support points involves a spring loaded pivotally mounted arm riding in a track on the vehicle body disposed on the exterior of the vehicle, either at the top or center of the vehicle side.” *Id.* at 1:8-15. Thus, Eltra discloses the three-track sliding door of claim 9.

123. A person of ordinary skill in the art would have been motivated to use Eltra’s three-track sliding door of Eltra with the cabin of Modec and Messano. As Eltra discloses, sliding doors were a well-known alternative to hinged doors for large vehicles before the time of the invention. A person of ordinary skill in the art

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

would have understood that sliding doors are advantageous for semi-truck vehicles and other large vehicles because they provide a relatively easy and safe mechanism for opening the door and providing easy access to the interior of the vehicle. The person of ordinary skill in the art would have also recognized that the three-track sliding door design of Eltra is advantageous to properly secure the door to the vehicle at multiple attachment points while preventing damage to both the door and the tracks. Accordingly, claim 9 would have been obvious.

2. Claim 10: “wherein the door moves outward with respect to the body and backward with respect to the seat as the door is moved to an open position.”

124. As explained above with respect to claim 9, it would have been obvious to use the sliding door disclosed in Eltra with the Modec and Messano cabin. Claim 10 depends from claim 9 and recites merely well-known functionality of conventional sliding doors for vehicles. Indeed, as a person of ordinary skill in the art would have recognized, almost all conventional sliding doors in vehicles “move[] outward with respect to the body and backward with respect to the seat as the door is moved to an open position.”

125. Eltra expressly discloses the well-known functionality of conventional sliding doors for vehicles. Specifically, Eltra discloses:

When the door is being opened, the rear edge of the door is moved outwardly [...]. Then, as the door is moved rearwardly, the door slides to the rear at an angle [...].”

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Id. at 1:21-26. A person of ordinary skill in the art would have been motivated to use this well-known and conventional functionality because it was time-tested and known to work reliably. Accordingly, it would have been obvious to modify Modec and Messano to use a sliding door according to claim 9 “wherein the door moves outward with respect to the body and backward with respect to the seat as the door is moved to an open position.” Accordingly, claim 10 would have been obvious.

3. Claim 11: “wherein an activation signal turns on a drive motor to pull the door open and closed.”

126. As explained above, claim 10 would have been obvious in view of Modec, Messano, and Eltra. Claim 11 merely adds a conventional automatic sliding-door variation in which “an activation signal turns on a drive motor to pull the door open and closed.” Eltra expressly discloses this well-known and conventional variation of vehicle sliding doors:

An electrical switch disposed at any convenient point is used to open and close the door. When the electrical switch is operated to open the door, the cable which is terminated at the lever attached to the conventional operating mechanism is wound onto a winch, first unlatching then opening the door. An electrical switch, integral with the winch assembly, turns the winch motor off when the door reaches a predetermined position near the full open position. When the electrical switch is actuated to close the door, the cable which is guided around the edge of the door frame, and attached to the rear

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

edge of the door, is wound onto a winch drum, pulling the door towards its closed position.

Id. at 4:12-25. One of ordinary skill in the art would understand that this disclosure describes the use of a drive motor to pull the sliding door open and closed. Thus Eltra discloses a door “wherein an activation signal turns on a drive motor to pull the door open and closed.”

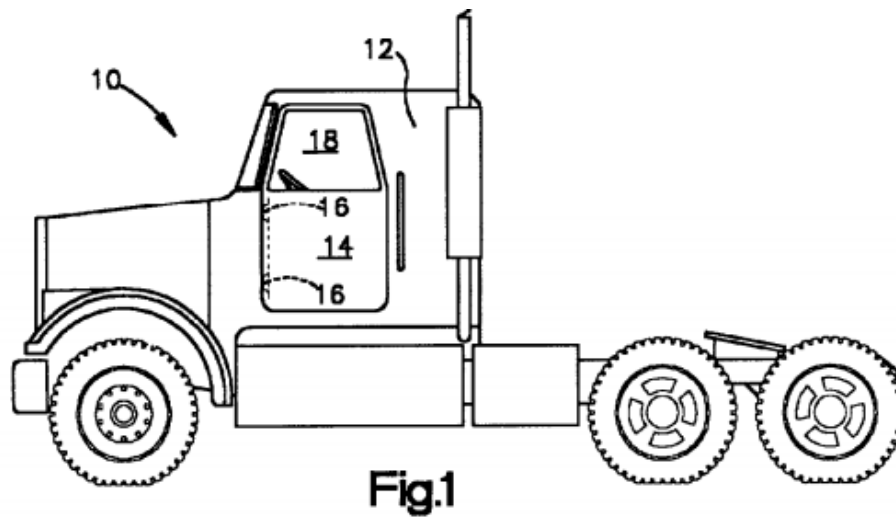
127. A person of ordinary skill in the art would be motivated to use Eltra’s motor-driven automatic sliding door with Modec and Messano. Specifically, a person of ordinary skill in the art would have known that the conventional motor-driven automatic sliding door disclosed by Eltra would be more convenient, easier to use, and safer than a manual sliding door. These advantages would be particularly compelling for the larger, heavier doors needed for a commercial vehicle or semi-truck vehicle disclosed by Modec and Messano. Accordingly, claim 11 would have been obvious.

F. Ground 5: Claim 12 would have been obvious over Modec, Messano, and Racz

128. Claim 12 depends from claim 1 and adds nothing more than “the door is hinged at one end and attached to the body of the semi-truck vehicle to open and close the door.” There is literally nothing more well-known or conventional than a hinged vehicle door. A person of ordinary skill in the art would find claim 12 self-evidently obvious over Modec and Messano.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

129. Further, Racz expressly discloses a semi-truck vehicle with the claimed hinged door. Racz discloses “an over the highway tractor” which “includes the usual cab 12 which is fitted with an access door 14” wherein “the door is mounted by a pair of hinges 16.” Exhibit 1010 at [0014]. Figure 1 of Racz is reproduced below.



A person of ordinary skill in the art would be motivated to use the conventional hinged door of Racz with the cabin of Modec and Messano because conventional hinges were time-tested and known to be reliable mechanisms for attaching doors to vehicles and allowing the doors to be opened. Accordingly, claim 12 would have been obvious.

G. Ground 6: Claim 13 would have been obvious over Modec, Messano, and Kia

130. Claim 13 depends from Claim 1 and adds the limitation “wherein the door comprises a peak load sensor configured to sense a threshold, such that when

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

a load on the door is higher than a threshold a control unit reverses the direction of the door and keeps the door from closing.”

131. Kia discloses an “automatic stop and reversal” feature for a “power sliding door.” Ex. 1011 at 35. Kia states:

If the power opening or closing is blocked by an object or part of the body, *the power sliding door* and power tailgate *will detect the resistance*, then the chime will sound 3 times, and stop movement or move to the full open position to allow the object to be cleared.

However, *if the resistance is weak such as an object that is thin or soft*, or the door is near latched position, *the automatic stop and reversal may not detect the resistance* and the closing operation will continue.

Id. (emphases added). A person of ordinary skill in the art would have understood this disclosure to mean that the power sliding door uses a “peak load sensor configured to sense a threshold, such that when a load on the door is higher than a threshold a control unit reverses the direction of the door and keeps the door from closing.” A person of ordinary skill in the art would also have understood that Kia’s disclosure stating that “if the resistance is weak such as an object that is thin or soft [...] the automatic stop and reversal may not detect the resistance,” is because thin or soft objects will not create sufficient resistance to cause the “load on the door” to be “higher than a threshold.”

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

132. A person of ordinary skill in the art would have been motivated to include an “automatic stop and reversal” feature, as disclosed by Kia, with the combination of Modec and Messano because the “automatic stop and reversal” feature is an advantageous safety feature known by those of skill in the art to reduce injuries and property damage caused by an automatic door closing on a person or property.

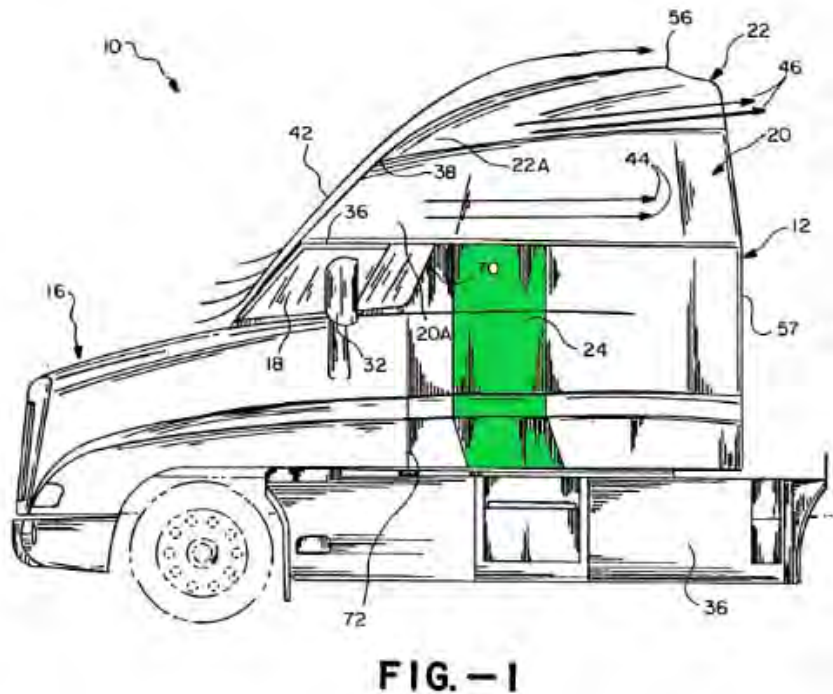
133. Kia and Modec are both within general technological field of vehicle doors and a person of ordinary skill in the art would have understood that Kia’s “automatic stop and reversal” feature could be easily scaled and successfully used with a semi-truck vehicle to provide the same safety advantages. Accordingly, claim 13 would have been obvious.

H. Ground 7: Claim 14 would have been obvious over Modec, Messano, and Marlowe

134. Claim 14 depends from claim 1 and adds the limitation “wherein the door is located approximately at a midpoint of the body of the semi-truck vehicle to provide ingress and egress into the cabin.”

135. Figure 1 of Marlowe, reproduced below, shows driver’s door **24** (green).

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084



Ex. 1008, Fig. 1 (color added). A person of ordinary skill in the art would have understood that Figure 1 of Marlowe shows a semi-truck “wherein the door is located approximately at a midpoint of the body of the semi-truck vehicle to provide ingress and egress into the cabin.”

136. A person of ordinary skill in the art would have been motivated to modify the combination of Modec and Messano with the door location from Marlowe because locating the door at the midpoint of the body is an obvious design choice, which provides provide additional space behind the seat. Accordingly, claim 14 would have been obvious.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

I. Ground 8: Claims 17 and 19 would have been obvious over Modec, Messano, and Plummer

1. Claim 17: “wherein the vehicle further comprises a sleeper within the cabin.”

137. Claim 17 depends from Claim 1 and adds the limitation that “wherein the vehicle further comprises a sleeper within the cabin”.

138. Plummer contains Figure 5, reproduced below. Plummer states that, “As is indicated in FIG. 5, the interior region of a long-haul truck typically includes a sleeper unit 142 and a driving compartment 144.” Exhibit 1012 at 15:38-40.

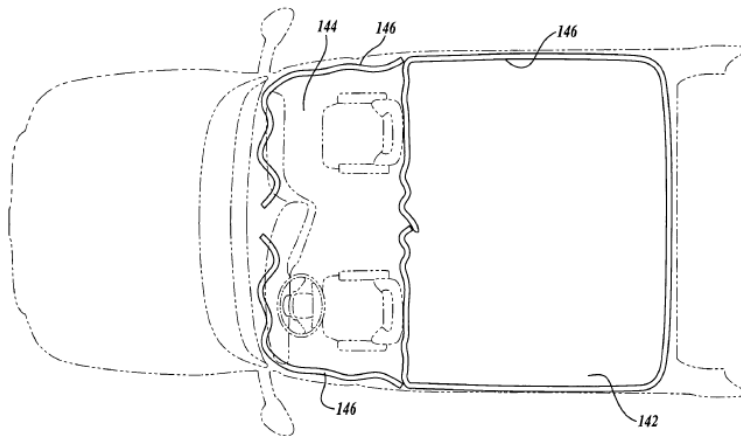


Fig. 5.

139. One of ordinary skill in the art would have known that semi-trucks often contained sleeper units, as semi-truck drivers often sleep in their trucks.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

140. One of ordinary skill in the art would have been motivated to add the conventional sleeper described in Plummer to provide a place for the driver to sleep during long-haul trips. Accordingly, claim 17 would have been obvious.

2. **Claim 19: “wherein the sleeper comprises a bunk bed, a cooling appliance having a volume that is at least 15 cubic feet, and a microwave oven.”**

141. Claim 19 depends from Claim 1 and adds the limitation, “wherein the sleeper comprises a bunk bed, a cooling appliance having a volume that is at least 15 cubic feet, and a microwave oven”.

142. A person of ordinary skill in the art would have understood that Plummer’s “sleeper unit” would have a bed. A person of ordinary skill in the art would have known that bunk beds could be used in semi-truck sleeper units, and would have been motivated to design the sleeper unit with the obvious design choice of a bunk bed, in order to provide storage or to locate other truck features under the bed. It was known to include a bunk bed in a semi-truck sleeper unit. *See* Ex. 1015.

143. Plummer also discloses that “[v]arious vehicles such as long-haul trucks . . . include heating and air conditioning, lighting, and appliances such as refrigerators, coffee makers and microwave ovens.” Ex. 1012 at 1:15-22. A person of ordinary skill in the art would have understood that a refrigerator is “a cooling appliance”. It would have been an obvious design choice to a person of

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

ordinary skill in the art to provide a refrigerator with a “volume that is at least 15 cubic feet.” A person of ordinary skill in the art would have understood that the selection of a specific volume for a refrigerator would be an obvious design choice, and the selection of a refrigerator having a volume that is at least 15 cubic feet would have been an obvious design choice to maximize the storage space for refrigerated items.

144. A person of ordinary skill in the art would have known that bunk beds, refrigerators, and microwave ovens were conventional items included in sleeping units for the comfort and convenience of the driver. A person of ordinary skill in the art would have been motivated to add a “bunk bed, a cooling appliance having a volume that is at least 15 cubic feet, and a microwave oven” to a truck sleeper with the combination of Modec and Messano in order to provide a place for the driver to sleep, additional storage, and ways for the driver to refrigerate and cook or warm food during long-haul trips. Accordingly, claim 19 would have been obvious.

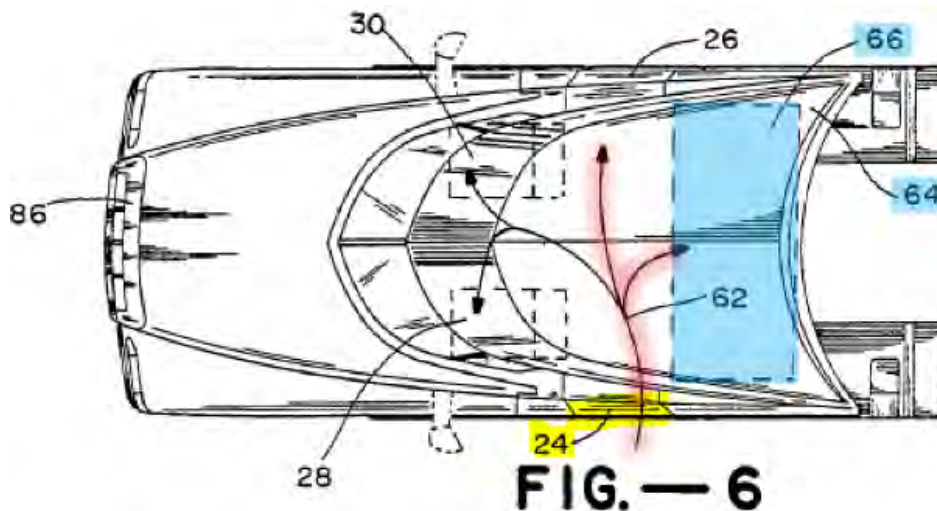
J. Ground 9: Claims 18 and 20 would have been obvious over Modec, Messano, and Marlowe

1. Claim 18: “wherein the door opens into the sleeper of the cabin.”

145. Claim 18 depends from claim 17 and adds the limitation that “the door opens into the sleeper of the cabin.”

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084

146. Marlowe discloses a semi-truck with a door that “opens into the sleeper of the cabin.” Figure 6, reproduced below, is a “top plan view” “diagrammatically illustrating the interior of the truck’s cab and the way in which an individual can enter the cab through one of its side doors.” Ex. 1008 at 2:41-44. Figure 6 shows “driver and passenger doors **24** [yellow] and **26**.” *Id.* at 5:35-36. Figure 6 also shows that the “cab **12** includes a sleeper section **64** including a bed [blue] generally represented at **66**.”



Id., 5:40-42; Fig. 6. A person of ordinary skill in the art would understand that the sleeper section (64) and the bed (66) are the “sleeper of the cabin.” Marlowe discloses that “[t]his sleeper section is located rearwardly of doors **24** and **26** so as not to obstruct access into and out of the cab, again as depicted by arrow **62**.” *Id.* at 5:42-45. Arrow 62 clearly shows that the door of the cabin (24) opens into the sleeper of the cabin.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

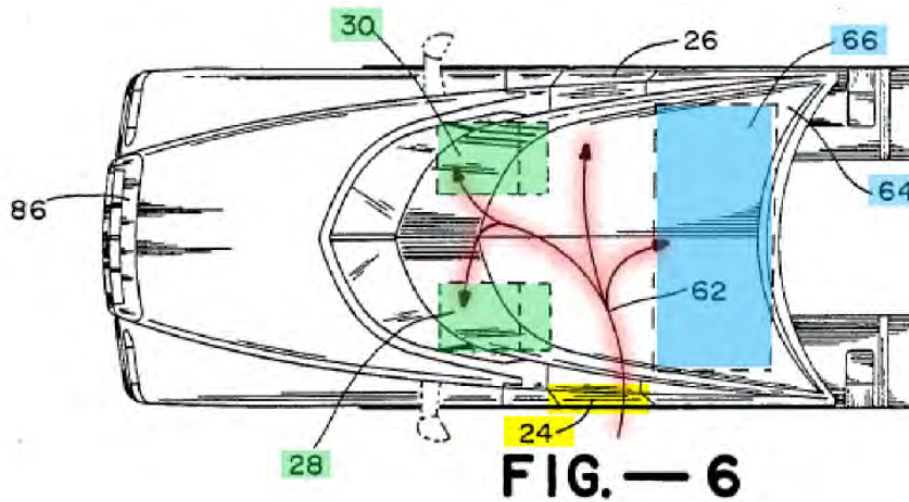
147. The Future Truck Report discloses that doors next to the driver seat or the passenger seat weaken the cab structure and can restrict the size of the driver or passenger windows. Therefore, a cab design in which the door is not next to the driver seat or the passenger seat would increase the cab strength and allow for larger driver and passenger windows, increasing safety and visibility. A person of ordinary skill in the art would understand that a door opening into the sleeper of the cab would increase the cab strength and safety, as described by the Future Truck Report. Accordingly, claim 18 would have been obvious.

2. Claim 20: “wherein entry into the cabin of the semi-truck vehicle provides full access to the seat and the sleeper simultaneously.”

148. Claim 20 depends from claim 17 and adds the limitation that “entry into the cabin of the semi-truck vehicle provides full access to the seat and the sleeper simultaneously.”

149. Marlowe discloses a semi-truck “wherein entry into the cabin of the semi-truck vehicle provides full access to the seat and the sleeper simultaneously.” Figure 6 of Marlowe, reproduced below, is a “top plan view” “diagrammatically illustrating the interior of the trucks cab and the way in which an individual can enter the cab through one of its side doors.” Ex. 1008 at 2:41-44.

Tesla, Inc. v. Nikola Corporation
 IPR Petition – U.S. Patent No. 10,077,084



Id., Figure 6. Figure 6 shows “driver and passenger doors 24 [yellow] and 26 are located rearwardly of driver and passenger seats 28 and 30 [green] so as not to obstruct access into and out of the cab, as depicted by arrow 62 [red].” *Id.* at 5:35-40. Arrow 62 clearly shows that entry into the cabin through the door (24) provides access to the seats. *Id.*, Fig. 6.

150. Figure 6 also shows that the “cab 12 includes a sleeper section 64 including a bed [blue] generally represented at 66.” *Id.* at 5:40-42. A person of ordinary skill in the art would understand that the sleeper section (64) and the bed (66) are the “sleeper of the cabin.” Marlowe discloses that “[t]his sleeper section is located rearwardly of doors 24 and 26 so as not to obstruct access into and out of the cab, again as depicted by arrow 62.” *Id.* at 5:42-45. Arrow 62 clearly shows that entry from the door of the cabin (24) provides access to the sleeper section. *Id.*, Fig. 6.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

151. A person of ordinary skill in the art would have been motivated to add the disclosed sleeper section of Marlowe to Modec and Messano to provide a place for the driver to sleep during long-haul trips.

152. The Future Truck Report discloses that doors next to the driver seat or the passenger seat weaken the cab structure and can restrict the size of the driver or passenger windows. Therefore, a cab design in which the door is not next to the driver seat or the passenger seat would increase the cab strength and allow for larger driver and passenger windows, increasing safety and visibility. A person of ordinary skill in the art would understand that a cab design with the door positioned as in Marlowe would increase the cab strength and allow for larger driver and passenger windows, increasing safety and visibility. Accordingly, claim 20 would have been obvious.

K. Ground 10: Claim 22 would have been obvious over Modec, Messano, and the Man Annual Report

153. Claim 22 depends from claim 1 and adds the limitation “wherein an opening into the cabin comprises a clearance that is at least six feet five inches in height.” In further view of the Man Annual Report, it would have been obvious to modify the combination of Modec and Messano to make the door “at least six feet five inches in height” to allow most drivers to enter the truck without stooping or crouching.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

154. The Man Annual Report, published in 2012, contained several pictures of the Man Concept S semi-truck, including the following picture of a semi-truck vehicle with a full-sized door extending nearly the entire height of the cab, reproduced below:



Ex. 1013 at 9. A person of ordinary skill in the art would understand from that picture that the pictured door extends almost the entire height of the cabin, and would provide “an opening into the cabin” with “a clearance that is at least six feet five inches in height.”

155. The Man Annual Report also published a picture showing the same Man Concept S semi-truck near two people, reproduced below:

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Ex. 1013 at 8. A person of ordinary skill in the art would understand from this picture that the cabin of the semi-truck pictured is at least several feet taller than the people standing in front of the truck.

156. Based on the two photos from the Man Annual Report reproduced above, a person of ordinary skill in the art would understand that the door of the

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

Man Concept S truck pictured provides “an opening into the cabin” with “a clearance that is at least six feet five inches in height.”

157. Designing a cab with a door that is at least six feet five inches in height would be an obvious design choice for large vehicles such as semi-trucks. A person of ordinary skill in the art would have known that taller doors are generally preferred to shorter doors because they allow a wider variety of people to enter the vehicle without stooping, crouching, or risking head injury. A person of ordinary skill in the art would have understood that a door “at least six feet five inches in height” would allow most drivers to enter the truck without stooping, crouching, or risking head injury.

158. A person of ordinary skill in the art would also have understood that designing a cab with a door “at least six feet five inches in height” would require nothing more than routine adjustments to the overall size of the cabin and that there would be no technical or other obstacle to the use of a door of that height with Modec and Messano. Accordingly, claim 22 would have been obvious.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

L. Ground 11: Claims 23-24 would have been obvious over Modec, Messano, and Freightliner

1. Claim 23: “wherein the semi-truck vehicle further comprises at least one full-size step and at least one hand hold to provide at least two points of leverage and for access and entry into the interior of the cabin.”

159. Claim 23 depends from Claim 1, and adds the limitation “wherein the semi-truck vehicle further comprises at least one full-size step and at least one hand hold to provide at least two points of leverage and for access and entry into the interior of the cabin.”

160. A person of ordinary skill in the art would have been motivated to design a cabin with at least one full-size step and at least one hand hold, as they would be aware of the need for such features to allow the driver to enter the cabin safely and easily. A person of ordinary skill in the art would be aware of the general practice in the industry of including steps and handholds to provide leverage and for access and entry into the cabin of trucks. It would be an obvious design choice for a person of ordinary skill in the art to include these features in the design of any truck.

161. Freightliner discloses the use of handholds and steps in truck design. The below image is reproduced from Freightliner.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Exhibit 1014 at 14. An image of the same figure currently accessible from the JSTOR website is reproduced below:



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Ex. 1019 at 5. A person of ordinary skill in the art would recognize that Figure 13 depicts a semi-truck with two full-size steps and two handles. A person of

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

ordinary skill in the art would also recognize that the handles and steps shown in Figure 13 would give the user at least two points of leverage, and would provide the driver with access and entry into the cabin.

162. A person of ordinary skill in the art would be motivated to include the full-size step and handhold of Freightliner with the combination of Modec and Messano because the handholds and steps disclosed in Freightliner would make it easier and safer for the driver to enter the cabin. Indeed, Freightliner expressly teaches that steps and handholds are necessary to allow a driver to safely and more easily enter the cabin. Exhibit 1014 at 14 (illustrating a COE truck and explaining the need for steps and handholds to enter the cabin). Accordingly, claim 23 would have been obvious.

2. Claim 24: “wherein there are two steps and two handholds that provide four points of leverage for entry into the interior of the cabin, such that a user enters into the cabin facing forward.”

163. Claim 24 depends from Claim 23, and adds the limitation, “wherein there are two steps and two handholds that provide four points of leverage for entry into the interior of the cabin, such that a user enters into the cabin facing forward.”

164. As described above, Figure 13 of Freightliner depicts a semi-truck with two full-size steps and two handles. As shown in Figure 13, reproduced below, Freightliner also shows that the user enters into the cabin facing forward.

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Exhibit 1014 at 14. An image of the same figure currently accessible on the JSTOR website is reproduced below:



Figure 13. Driver Entering the Argosy Cab with Traditional Steps

Ex. 1019 at 5. A person of ordinary skill in the art would recognize that Figure 13 depicts a semi-truck with two full-size steps and two handles. One of skill in the

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

art would also recognize that the two steps and two handles in Figure 13 would give the user at least four points of leverage for entry into the interior of the cabin.

165. A person of ordinary skill in the art would be motivated to include the full-size step and handhold of Freightliner with the combination of Modec and Messano because the handholds and steps disclosed in Freightliner would make it easier and safer for the driver to enter the cabin. Indeed, Freightliner expressly teaches that steps and handholds are necessary to allow a driver to safely and more easily enter the cabin. Exhibit 1014 at 14 (illustrating a COE truck and explaining the need for steps and handholds to enter the cabin). Accordingly, claim 24 would have been obvious.

M. Secondary Considerations

166. I understand that, to the extent there is any evidence of secondary considerations showing that the claims would not have been obvious, such evidence is typically introduced by patent owners in an IPR after the petition has been filed. However, I considered any relevant information known to me and I am not aware of any secondary considerations of non-obviousness that would suggest that the claims of the '084 patent would not have been obvious. For example: (1) I am not aware of any evidence that a commercial embodiment of the claims has achieved commercial success because of the merits of the claimed features; (2) I am not aware of any evidence that the inventors of the '084 patent solved a long-

Tesla, Inc. v. Nikola Corporation
IPR Petition – U.S. Patent No. 10,077,084

felt but previously unsolved need; and (3) I am not aware of any evidence of failure by others. I reserve the right to evaluate and respond to any evidence of alleged secondary considerations of non-obviousness that Patent Owner introduces in this proceeding.

VIII. CONCLUSION

167. For the foregoing reasons, claims 1-26 of the '084 patent would have been obvious. I understand that Patent Owner may make arguments and introduce evidence to attempt to rebut my analysis and conclusions set forth herein. I reserve the right to evaluate and respond to Patent Owner's arguments and evidence.

168. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on September 20, 2019 at Beverly Hills, Michigan.



Brian C. Baker

Exhibit D

Trials@uspto.gov
571.272.7822

Paper 7
Entered: March 27, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

NIKOLA CORPORATION,
Patent Owner.

IPR2019-01646
Patent 10,077,084 B2

Before LINDA E. HORNER, PATRICK R. SCANLON, and
FRANCES L. IPPOLITO, *Administrative Patent Judges*.

IPPOLITO, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314(a)

IPR2019-01646
Patent 10,077,084 B2

I. INTRODUCTION

Petitioner Tesla, Inc. filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1–26 of U.S. Patent No. 10,077,084 B2 (Ex. 1001, “the ’084 patent”). Patent Owner Nikola Corporation filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the Petition and any response thereto shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Taking into account the arguments presented in Patent Owner’s Preliminary Response, we conclude that the information presented in the Petition does not establish that there is a reasonable likelihood that Petitioner would prevail in challenging at least one of claims 1–26 of the ’084 patent as unpatentable under the grounds presented in the Petition. Pursuant to § 314, we hereby do not institute an *inter partes* review as to these claims of the ’084 patent.

A. Related Matters

According to Petitioner, the ’084 patent is the subject of *Nikola Corporation v. Tesla, Inc.* Case No. 3:18-cv-7460 in the U.S. District Court for the Northern District of California. Pet. 81; *see also* Paper 4.

B. The ’084 Patent

The ’084 patent relates to a door on a semi-truck vehicle. Ex. 1001, 1:29–30. Generally, vehicle doors provide ingress into and egress from a vehicle, particularly a semi-truck vehicle, and provide access to a seat in the vehicle. *See* Ex. 1001, 1:34–38. The doors often entail ingress or egress at

IPR2019-01646
 Patent 10,077,084 B2

an angle that may be uncomfortable or even dangerous, and because the doors are a significant distance above the ground, a user must use caution when entering and getting seated in the vehicle. *See id.* at 1:38–45.

The '084 patent purports to address this problem by providing “at least one door that provides ingress and egress to the interior of the cabin of the vehicle, and the door opens into the cabin from a backside of the seat.” *Id.* at 2:28–31. The '084 patent does so by using an electric motor and eliminating the standard combustion engine so that layout of the semi-truck can be reconfigured such that the seat can “be located at a position nearer the front of the vehicle body 102 than in a conventional semi-truck.” *Id.* at 4:23–32. Eliminating the combustion engine enables a location of the door to improve access and safety when entering or exiting the vehicle. *Id.* at 4:50–51. Exemplary door 110 is depicted in Figure 1, reproduced below.

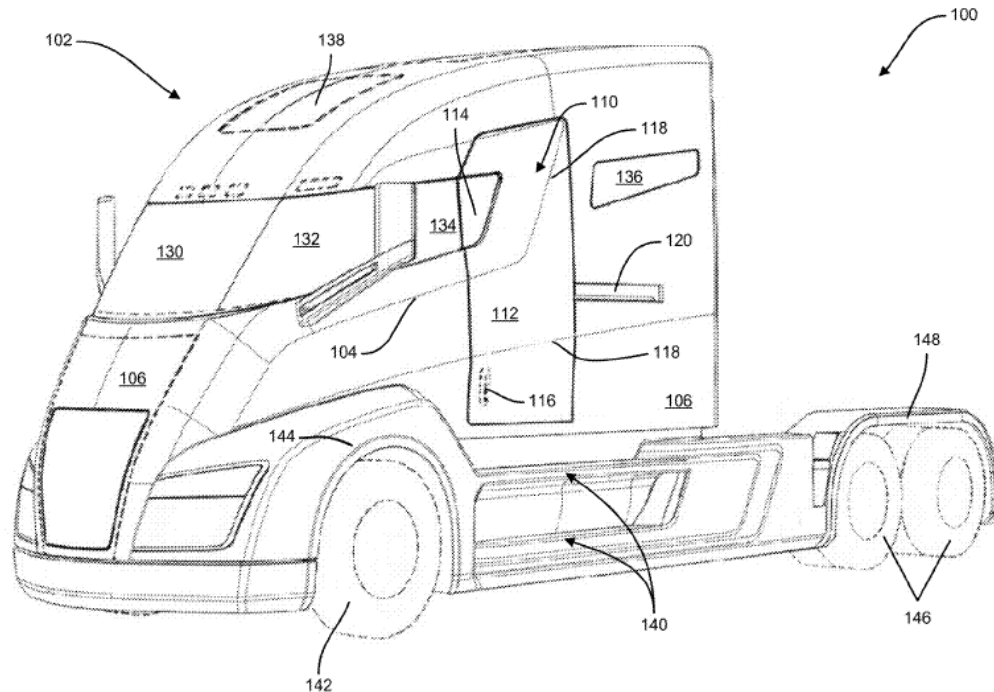


FIG. 1

IPR2019-01646

Patent 10,077,084 B2

Figure 1 is a front perspective view of an embodiment of a vehicle. Ex. 1001, 1:56–57. In the Figure 1 embodiment, door 110 is above step 140 so that a user may comfortably ascend or descend the step when entering or exiting the vehicle through the door. *Id.* at 4:54–57. The door 110 is at a backside of front wheel 142 and wheel well 144 and opens to a backside of at least one seat 510 in cabin 550, as seen in Figure 5, reproduced below. *Id.* at 4:59–66.

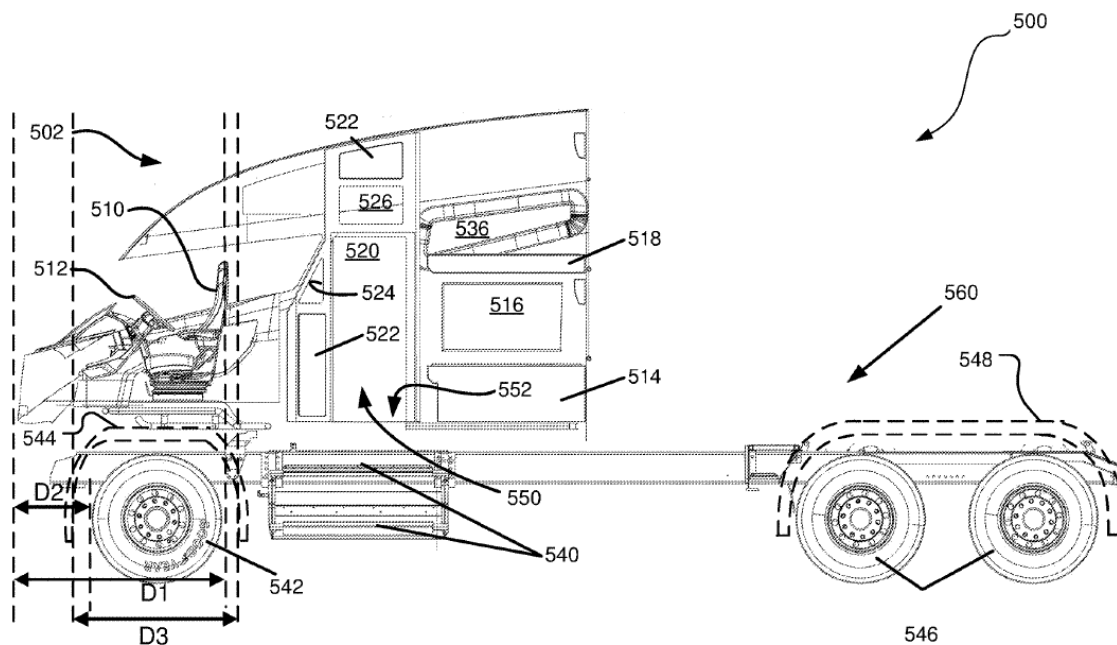
**FIG. 5**

Figure 5 is a side view of an embodiment of a vehicle showing interior components of the vehicle. Ex. 1001, 2:1–2. In Figure 5, D1 illustrates a distance from a front end of the vehicle body 502 to a rear most location on the front wheels 542. *Id.* at 9:1–3. D3 illustrates a distance between a front most portion and a rear most portion of the front wheel well 544, and the seat is located within the horizontal distance D3. *Id.* at 9:6–10. Returning to Figure 1, a foremost portion of the door is behind the first distance D1. *Id.*

IPR2019-01646

Patent 10,077,084 B2

at 11:32–33. “For example, all portions of an opening revealed by a door may be greater than the first distance D1 from the front of the vehicle. Thus, the door may provide access to a cabin behind a seat, such as a driver’s seat or driver compartment.” *Id.* at 11:32–37.

C. Challenged Claims

Petitioner challenges claims 1–26. Claims 1 and 26 are independent claims. Claim 1 is reproduced below:

1. A semi-truck vehicle comprising:
 - an electric drive train;
 - a body;
 - a cabin located within the body of the semi-truck vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person;
 - a seat located in the interior of the cabin that is configured for seating a user; and
 - a door comprising a width extending a horizontal length of the door, wherein the door provides ingress and egress to the interior of the cabin of the semi-truck vehicle;
 - wherein the door is located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and the width of the door is disposed between the frontmost side of the door and a rearmost side of the door, at least a portion of the door being positioned behind the seat and at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well such that the door opens to provide ingress and egress into the cabin from a backside of the seat; and
 - wherein the door is the foremost door providing ingress or egress into the interior of the cabin.

Ex. 1001, 15:65–16:21.

IPR2019-01646

Patent 10,077,084 B2

D. Alleged Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

References	35 U.S.C. §	Claims Challenged
Modec ¹ and Messano ²	§ 103	1–5, 15, 16, 25
Modec, Messano, and Future Truck Report ³	§ 103	6
Modec, Messano, and Marlowe ⁴	§ 103	7, 8, 21, 26
Modec, Messano, and Eltra ⁵	§ 103	9–11
Modec, Messano, and Racz ⁶	§ 103	12
Modec, Messano, and Kia ⁷	§ 103	13
Modec, Messano, and Marlowe	§ 103	14
Modec, Messano, and Plummer ⁸	§ 103	17, 19
Modec, Messano, Marlowe	§ 103	18, 20

¹ WO 2009/001086 A2 to Cunningham et al., applicant, Modec Limited, published Dec. 31, 2008 (Exhibit 1004) (“Modec”).

² U.S. Patent No. 7,338,335 B1, issued Mar. 4, 2008 (Exhibit 1005) (“Messano”).

³ *Future Truck Committee Information Report: 2001-2*, The Maintenance Council, published Mar. 2001 (Exhibit 1007) (“Future Truck Report”).

⁴ U.S. Patent No. 4,932,716, issued June 12, 1990 (Ex. 1008) (“Marlowe”).

⁵ WIPO Publication No. WO 81/01587 A1 to Kern et al., applicant, Eltra Corporation, published June 11, 1981 (Exhibit 1009) (“Eltra”).

⁶ U.S. Patent App. Pub. No. US 2003/0006628 A1, published Jan. 9, 2003 (Exhibit 1010) (“Racz”).

⁷ Kia Motors Owner’s Manual, published 2011 (Exhibit 1011) (“Kia”).

⁸ U.S. Patent No. 7,145,788 B2, issued Dec. 5, 2006 (Exhibit 1012) (“Plummer”).

IPR2019-01646

Patent 10,077,084 B2

Modec, Messano, and MAN Annual Report ⁹	§ 103	22
Modec, Messano, and Freightliner ¹⁰	§ 103	23, 24

Pet. 3–8. In addition to the references listed above, Petitioner relies on the Declaration of Brian C. Baker. Ex. 1002.

II. ANALYSIS

A. Claim Construction

For petitions such as this one, filed after November 13, 2018, we apply the same claim construction standard “used in the federal courts, in other words, the claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b),” which is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2019). Under the *Phillips* standard, the “words of a claim are generally given their ordinary and customary meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1312–13.

Petitioner proposes constructions for the terms “adjacent to” and “electric drive train.” See Pet. 8–13. In its Preliminary Response, Patent Owner asserts that no claim construction is necessary, but if construction of

⁹ *The Partner of Choice*, MAN SE 2012 Annual Report (Exhibit 1013) (“MAN Annual Report”).

¹⁰ Josef Loczi, *Ergonomics Program at Freightliner*, Society of Automotive Engineers, Inc., Journal of Commercial Vehicles, Section 2 – Volume 109, SAE 2000, pp. 462–69 (Exhibit 1014) (“Freightliner”).

IPR2019-01646

Patent 10,077,084 B2

“adjacent to” is necessary, Petitioner’s construction should not be used because it is too narrow. Prelim. Resp. 8–17. We determine that for the purposes of this Decision, it is unnecessary to expressly construe any claim term. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (Only terms in controversy must be construed and only to the extent necessary to resolve the controversy); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs* in the context of an *inter partes* review).

B. Alleged Obviousness

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under § 103 that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of non-obviousness such as “commercial success, long-felt but unsolved needs, failure of others, etc.” *Id.* at 17–18. “While the sequence of these questions might be reordered in any particular case,” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), the Federal Circuit has “repeatedly emphasized that an obviousness inquiry requires examination of all four *Graham* factors and that an obviousness determination can be made only after consideration of each factor.” *Nike, Inc. v. Adidas AG*, 812 F.3d 1326, 1335 (Fed. Cir. 2016).

We note that, with respect to the fourth *Graham* factor, the current record in this proceeding does not include any argument or evidence directed

IPR2019-01646
Patent 10,077,084 B2

to secondary considerations of nonobviousness. The analysis below addresses the first three *Graham* factors.

C. Level of Ordinary Skill in the Art

In determining the level of skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus. Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

Petitioner contends that an ordinarily skilled artisan at the time of the invention of the '084 patent would have had the following education and experience, a “Bachelor of Science degree in an industrial design field and two years of experience in automotive design.” Pet. 13 (citing, Ex. 1002 ¶ 17). Patent Owner does not dispute this level of skill. Prelim. Resp. 17. For purposes of this Decision, we adopt Petitioner’s proposal.

D. Obviousness Based on Modec and Messano

Petitioner asserts that claims 1–5, 15, 16, and 25 of the '084 patent would have been obvious over the combination of Modec and Messano. Pet. 27–48. For the reasons discussed below, we are not persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on this challenge.

1. Summary of Modec (Ex. 1004)

Modec describes an electric vehicle. Ex. 1004, 14:30. An example of electric vehicle 100 is shown in Figure 1, reproduced below.

IPR2019-01646
 Patent 10,077,084 B2

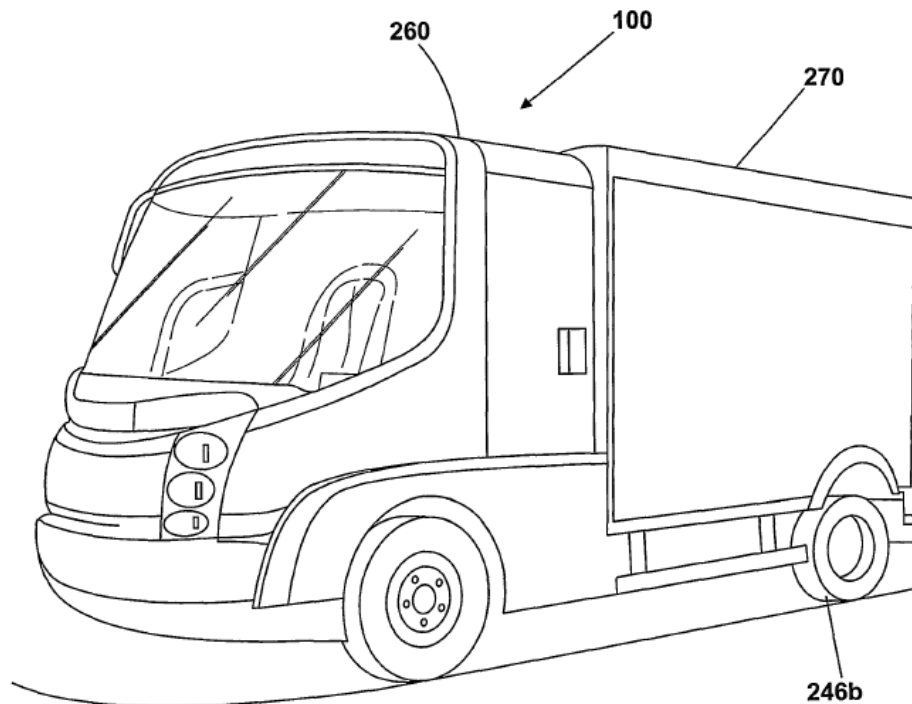


Fig. 1

Figure 1 is a general illustration of an electric vehicle. Ex. 1004, 13:29.

Modoc teaches that although vehicle 100 depicted in Figure 1 is a specialist delivery vehicle, the vehicle could be a box van, minibus or any other commercial or domestic use vehicle. Ex. 1004, 14:30–15:2. Vehicle 100 has an electric drive train including an electric motor 200 that is powered by a battery assembly. *Id.* at 15:2–4; Fig. 2. At the front of vehicle 100 is cab 260 where the driver sits, which is protected by a lockable door. *Id.* at 15:29–30. The cab has a driver seat and a passenger seat (not shown) as well as standard manual controls including a steering wheel, brakes, and accelerator. *Id.* at 15:30–16:1. At the rear of the vehicle is body 270 such as a closed van body as shown in Figure 1 (although other bodies can be provided). Ex. 1004, 16:4–6.

IPR2019-01646

Patent 10,077,084 B2

2. Summary of Messano (Ex. 1005)

Messano relates to a heavy-duty vehicle hybrid drive and suspension system. Ex. 1005, 1:33–34. Hybrid vehicle drive systems employ an internal combustion engine and electric motors to drive the wheels. *Id.* at 1:45–46. Messano discloses that “Road-Wheel Modules provide the motive system for the vehicle and vehicle trailers. A Road-Wheel Module consists of an electric drive motor (which also provides the secondary braking for slowing and stopping the vehicle when acting as generators), a separate conventional brake, and suitable suspension.” *Id.* at 4:26–31. A tractor truck 1 and semi-trailer 2 incorporating Variable-Height Suspension Modules, as a suitable suspension, is seen in Figure 27, reproduced below.

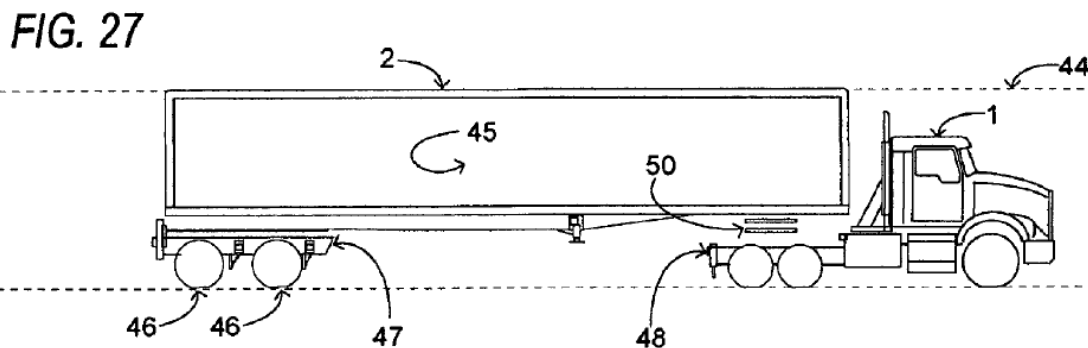


Figure 27 shows a schematic longitudinal side view of a tractor truck and semi-trailer. *Id.* at 7:18–19.

Messano discloses that “the trailer chassis 47 incorporates the Variable-Height Suspension Modules . . . , so that the trailer height can be automatically lowered from the cab of the truck.” *Id.* at 16:31–35.

3. Independent Claim 1

Claim 1 is directed to a semi-truck vehicle that includes a door:

IPR2019-01646

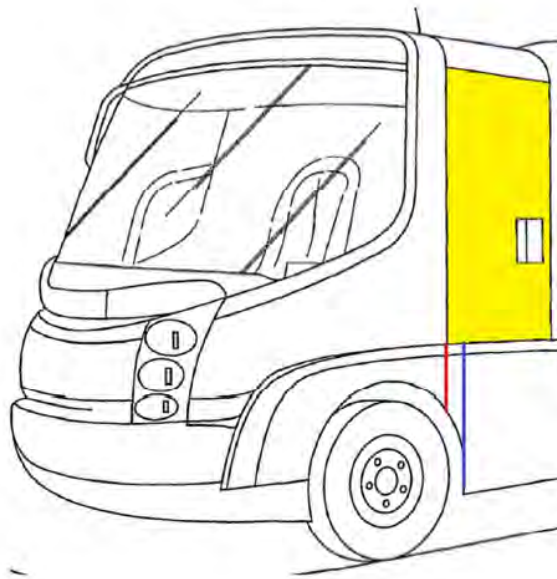
Patent 10,077,084 B2

wherein the door is located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and the width of the door is disposed between the frontmost side of the door and a rearmost side of the door, at least a portion of the door being positioned behind the seat and at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well such that the door opens to provide ingress and egress into the cabin from a backside of the seat.

Ex. 1001, 16:10–19.

a. Petitioner's Contentions

Petitioner parses this limitation into three portions, the “adjacent to” portion, the “between” portion, and the “behind” portion, and for each portion includes an annotated version of Modec’s Figure 1, reproduced below. Pet. 35.



Petitioner’s “adjacent to” annotated version of Figure 1 of Modec includes a red line and a blue line that, according to Petitioner, “shows that ‘the door [yellow] is located on the body such that the frontmost side of the door [red line extended from frontmost edge] is adjacent to a rearmost

IPR2019-01646

Patent 10,077,084 B2

portion of a front wheel well [blue line extended from rearmost edge].” Pet. 34 (quoting Ex. 1002 ¶ 78) (brackets in original). Petitioner asserts that the “adjacent to” limitation is satisfied by the components being “nearby but not touching,” and does not require that “the frontmost side of the door or the rearmost portion of the wheel well is in the forward-most horizontal position.” Pet. 36.

Petitioner’s “between” annotated version of Figure 1 of Modec is shown below. Pet. 38.

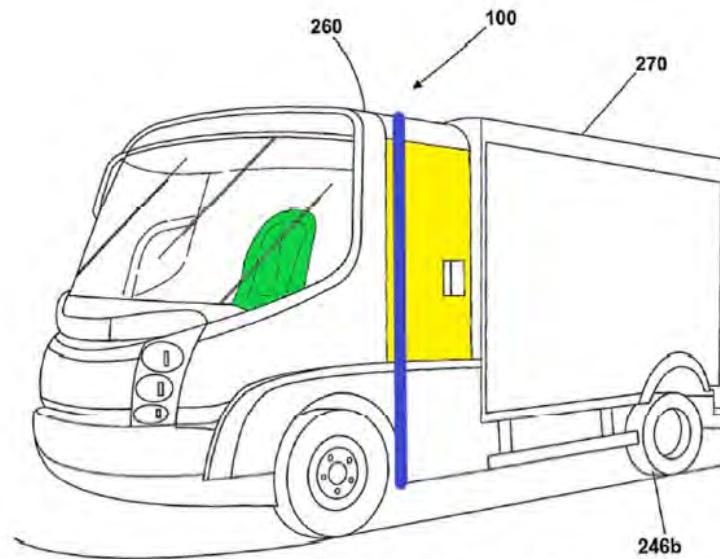


Petitioner’s “between” annotated version of Figure 1 of Modec includes a red, blue, and green lines that, according to Petitioner, “shows that ‘the width [red] of the door [yellow] is disposed between the frontmost side [green] of the door and the rearmost side [blue] of the door.’” Pet. 38 (quoting Ex. 1002 ¶ 81).

Petitioner’s “behind” annotated version of Figure 1 of Modec is shown below. Pet. 39.

IPR2019-01646

Patent 10,077,084 B2

**Fig. 1**

Petitioner’s “behind” annotated version of Figure 1 of Modec includes a blue line that, according to Petitioner, “shows that ‘at least a portion of the door [yellow]’ is ‘positioned behind the seat [green] and at least a portion of the seat [green] is disposed to be forward of a line defining the rearmost portion of the wheel well [blue line extended from rearmost edge].” Pet. 39 (quoting Ex. 1002 ¶ 82). Petitioner adds that Modec’s disclosure that the door can be unlocked “to allow the driver to access the vehicle through the door” establishes that “the door opens to provide ingress and egress into the cabin.” Pet. 40 (quoting Ex. 1004, 22:18–20). Petitioner reasons that because the door is behind the seat, ingress and egress into the cabin “can only be ‘from a backside of the seat.’” *Id.* (quoting Ex. 1002 ¶ 83).

b. Patent Owner’s Contentions

Patent Owner does not dispute that, under the ordinary and customary meaning of “adjacent to,” Modec discloses a door that is “adjacent to” a rearmost portion of a front wheel well. Prelim. Resp. 11. However, with regard to the remaining limitations, Patent Owner responds that

IPR2019-01646

Patent 10,077,084 B2

the entire Petition rests on a single rough figure, FIG. 1 of Modec, to satisfy what the Petition alleges are the key limitations of the two independent claims. That figure is not marked with dimensions and Modec does not assert that the figure is drawn to scale. Although Patent Owner does not dispute that Modec FIG. 1 discloses a wheel well, a door, and a seat, neither FIG. 1 nor any other disclosure in Modec teaches or suggests “*at least a portion of the door being positioned behind the seat,*” “*at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well,*” or “*such that the door opens to provide ingress and egress into the cabin from a backside of the seat.*”

Prelim. Resp. 3 (emphasis added).

Patent Owner adds that there is no evidence that would allow a person of ordinary skill in the art to conclude that Figure 1 of Modec shows at least a portion of the door is behind the seat. Prelim Resp. 21. Patent Owner further asserts that although Modec is silent as to the viewing angle or perspective of Figure 1, from the relative sizing of the front and rear wheels, Figure 1 “is drawn from the perspective of a person standing some distance away from a front corner of the vehicle, and not directly from the side of the vehicle.” *Id.* Thus, according to Patent Owner, Figure 1 of Modec only shows that the seat is to the left of the door, but “provides no information as to whether any portion of the door is positioned **behind** the seat, i.e., between the seat and a rear face of the cabin.” *Id.* Patent Owner also argues that Figure 1 “provides no information regarding whether ‘the door opens to provide ingress and egress into the cabin **from a backside of the seat,**’ as recited in claim 1.” *Id.*

Patent Owner further contends that Petitioner’s expert declaration is a verbatim copy of the Petition that “does not provide any explanation of how the expert was able to conclude from FIG. 1 that the three relative

IPR2019-01646

Patent 10,077,084 B2

positioning limitations are taught or suggested by Modec.” Prelim Resp. 26. According to Patent Owner, Petitioner’s expert “is merely offering an unsupported and conclusory interpretation of a roughly drawn figure.” *Id.*

Additionally, Patent Owner contends that because Figure 1 of Modec shows only one side of the cabin, “Modec provides no information that would allow one skilled in the art to conclude that the door shown in FIG. 1 is the ‘foremost door into the interior of the cabin,’ as required by claim 1.” *Id.* at 27. Patent Owner contends that Messano does not cure the deficiencies of Modec. *Id.* at 28.

c. Discussion

Having considered the parties’ submissions, we determine that Patent Owner has the better position. To Patent Owner’s point, we agree that the written description in Modec does not describe the angle or perspective that Figure 1 is intended to represent. Furthermore, we observe that Modec’s Figure 1 does not contain any of the added annotations provided in the Petition and Mr. Baker’s declaration. *See* Pet. 33, 35, 36, 39. Instead, Modec states that “**Figure 1** is a general illustration of an electric vehicle to which the invention relates.” Ex. 1004, 13:29–30. Additionally, Modec teaches that

Figure 1 shows an electric vehicle 100. The vehicle in this example is a specialist delivery vehicle, but through a simple change to the vehicle body it could be a box van or minibus or any other commercial or domestic use vehicle. At its heart, it is an electric drive train including an electric motor 200 which is supplied with power from a battery assembly 210.

Ex. 1004, 14:30–15:4. However, in this disclosure and in the entirety of Modec otherwise, Modec does not expressly describe the positioning of any of the door or seat relative to the rear wheel well of the vehicle shown in

IPR2019-01646
Patent 10,077,084 B2

Figure 1. *See id.* Indeed, from the view shown in Figure 1, reproduced below, it is unclear whether “at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well,” which is required in claim 1.

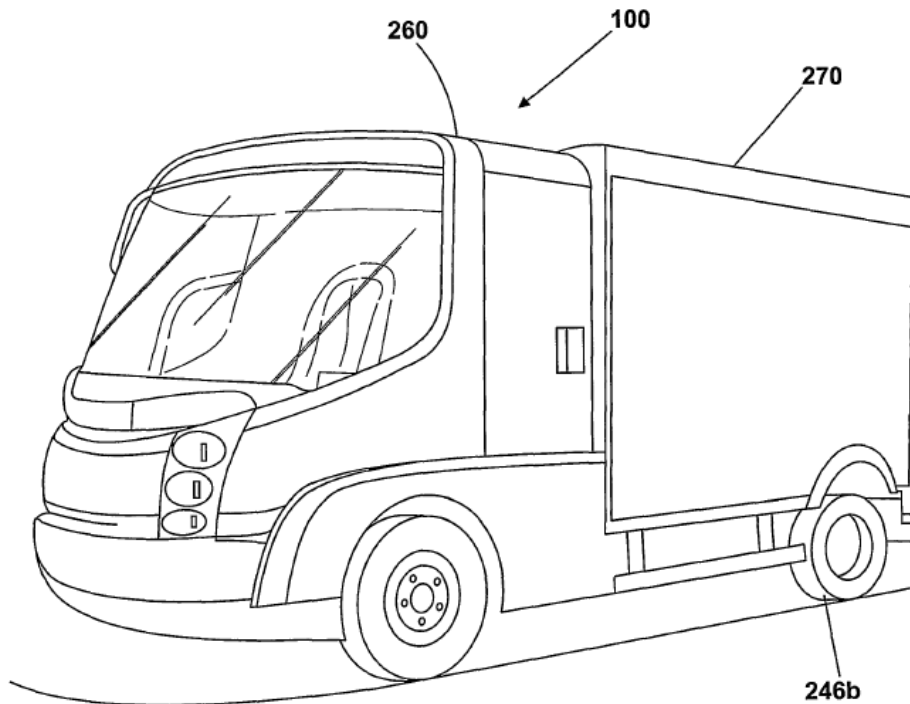


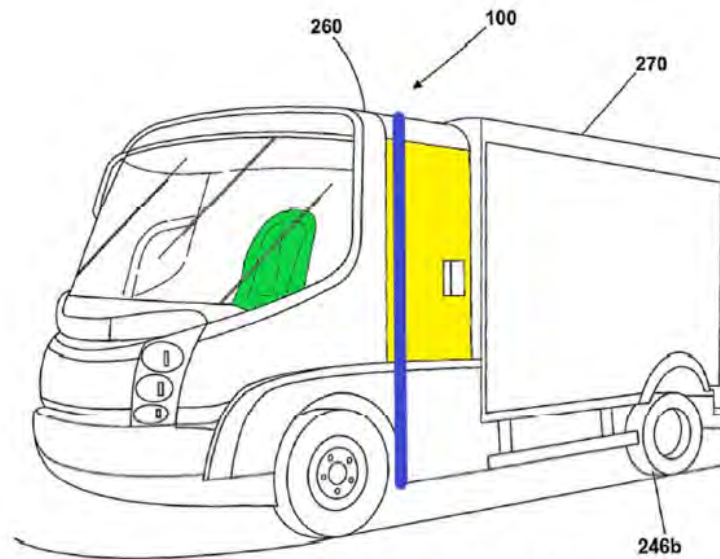
Fig. 1

Figure 1 is a general illustration of an electric vehicle. Ex. 1004, 13:29.

Further, we do not find Petitioner’s annotations to Figure 1 helpful in this regard. For example, Petitioner provides annotated Figure 1, reproduced below:

IPR2019-01646

Patent 10,077,084 B2

**Fig. 1**

In the annotated Figure 1, Petitioner adds a blue line that, according to Petitioner, “shows that ‘at least a portion of the door [yellow]’ is ‘positioned behind the seat [green] and at least a portion of the seat [green] is disposed to be forward of a line defining the rearmost portion of the wheel well [blue line extended from rearmost edge].” Pet. 39 (quoting Ex. 1002 ¶ 82). Even assuming that the blue line correctly denotes the rearmost portion of the wheel well, it is still impossible to confirm Petitioner’s assertion that the seat is positioned forward of the blue line. *See id.*

This is because Modec does not expressly describe the relative position of the seat, and, more particularly, does not provide any guidance as to the scale, perspective, or angle from which to view the drawing. Ex. 1004, *generally*. At best, we discern that the green seat is positioned to the left of the wheel well, but without a more detailed explanation from Petitioner, we are unable to discern from the annotated drawing how the seat is positioned relative to the added blue line.

IPR2019-01646

Patent 10,077,084 B2

Moreover, Petitioner's reliance on Mr. Baker's testimony is not persuasive. In cited paragraph 82, Mr. Baker testifies that

[t]he following annotated Figure 1 of Modec shows that "at least a portion of the door [yellow]" is "positioned behind the seat [green] and at least a portion of the seat [green] is disposed to be forward of a line defining the rearmost portion of the wheel well [blue line extended from rearmost edge]."

Ex. 1002 ¶ 82. Mr. Baker's testimony simply repeats the conclusions articulated in the Petition with no further explanation or support. Compare *id.* with Pet. 39. "Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight." See 37 C.F.R. § 42.65(a). Thus, neither Petitioner nor its declarant supports its conclusion with sufficient rationale, explanation, or evidence. Consequently, Petitioner has not sufficiently shown that a person of skill in the art would have understood Modec's Figure 1 to disclose "at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well" recited in claim 1.

In reviewing the record, we are mindful of the principle that patent drawings are not working drawings and we must not disregard things clearly shown in patent drawings. See *In re Mraz*, 455 F.2d 1069, 1072 (CCPA 1972). However, our reviewing court "has repeatedly cautioned against overreliance on drawings that are neither expressly to scale nor linked to quantitative values in the specification." *Krippelz v. Ford Motor Co.*, 667 F.3d 1261, 1268 (Fed. Cir. 2012). Here, even with Petitioner's annotations, it is not clear whether Modec's Figure 1 shows a portion of the green seat in front of Petitioner's blue line. Thus, we are not persuaded by Petitioner's unsupported arguments, which would require us to speculate on the contents of a patent drawing.

IPR2019-01646

Patent 10,077,084 B2

Additionally, Petitioner does not rely on Messano for these limitations. *See* Pet. 41–44. Petitioner relies on Messano primarily for its disclosure of a semi-truck vehicle. *See id.*

Based on the record before us and the analysis above, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention that independent claim 1 would have been obvious over the combination of Modec and Messano.

4. Claims 2, 3, 4, 5, 15, 16, and 25

Dependent claims 2, 3, 4, 5, 15, 16, and 25 each depend, directly, or indirectly, from independent claim 1. Ex. 1001, 16:22–33, 16:66–67, 17:1–2, 18:1–3. Petitioner asserts that the combination of Modec and Messano disclose each of the additional limitations of these dependent claims. Pet. 44–48. Petitioner relies on the arguments addressed above for the same limitations recited in claim 1 that are required in these dependent claims. *See id.*

Each of claims 2, 3, 4, 5, 15, 16, and 25 depends from independent claim 1 and includes all the limitations required in claim 1. Thus, for the reasons discussed with respect to claim 1, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention that claims 2, 3, 4, 5, 15, 16, and 25 would have been obvious over the combination of Modec and Messano.

5. Conclusion

Accordingly, on this record, we determine that Petitioner has not shown sufficient basis for instituting trial on the ground that claim 1 would have been obvious based on Modec and Messano. Similarly, for the same

IPR2019-01646
Patent 10,077,084 B2

reasons, we are not persuaded that Petitioner has shown sufficient basis for instituting trial on this same ground for claims 2–5, 15, 16, and 25.

*E. Obviousness based on Modec, Messano, and Future Truck Report –
Claim 6*

1. Summary of Future Truck Report

Future Truck Report discloses that drivers need to climb into the trucks, which lead to slips and falls. Ex 1007, 2. Future Truck report suggests alternative door positions, namely, a door at the right rear of the passenger side, or at the rear of the cab while eliminating the door on the driver’s side in order to eliminate the need for retractable steps/stairs and for doors opening into traffic. Ex 1007, 3.

2. Discussion

Claim 6 depends from claims 1 and 4, and further recites “wherein the single door is located on a right side when the user is seated in the seat of the semi-truck vehicle.” Ex. 1001, 16:33–35.

Petitioner contends that it would have been obvious to use a single door located on the right side, as taught by Future Truck Report, to “eliminate the need for retractable steps/stairs and for doors opening into traffic.” Pet. 48–49 (citing Ex. 1007, 3). Petitioner relies on the arguments addressed above for the same limitations recited in claim 1 that are required in dependent claim 6. *See id.*

Patent Owner asserts that this ground fails for the same reasons discussed above with respect to Petitioner’s challenge based on Modec and Messano. Prelim. Resp. 33¹¹.

¹¹ The Preliminary Response refers to claim 13 instead of claim 6 for this challenge. Prelim. Resp. 33. Nonetheless, we understand Patent Owner’s

IPR2019-01646
 Patent 10,077,084 B2

We agree with Patent Owner. For the reasons discussed above for claim 1, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention that claim 6 would have been obvious over the combination of Modec, Messano, and Future Truck Report. *See* Pet. 48–49 (citing Ex. 1007, 1, 3; Ex 1002 ¶¶ 101–102).

F. Obviousness based on Modec, Messano, and Marlowe – Claims 7, 8, 21, and 26

1. Summary of Marlowe

Marlowe relates to an aerodynamically enhanced truck having its cab located behind the truck engine, and mid-position driver and passenger doors. Ex. 1008, 1:5–10. In Marlowe, the driver and passenger doors 24, 26 are located rearwardly of driver and passenger seats 28, 30 to allow the trucker or a passenger to easily enter cab 12 behind the seats. *Id.* at 5:35–39, Fig. 6.

2. Independent Claim 26

a. Petitioner’s Contentions

In this challenge, Petitioner asserts that Modec and Messano disclose “a semi-truck vehicle,” “an electric drive train,” “a body,” and “a cabin ... configured to accommodate at least one person,” as recited in independent claim 26 for the same reasons discussed above for claim 1. *See* Pet. 54 (“This limitation is identical to the limitation of claim 1.”). Claim 26 also recites, “a first seat and a second seat located in the interior of the cabin” (Ex. 1001, 18:10–11), and Petitioner asserts that this is met by Modec’s disclosure of “a driver and a passenger seat (not shown).” Pet. 55 (citing Ex.

statements to be directed to the challenge based on Modec, Messano, and Future Truck Report against claim 6.

IPR2019-01646

Patent 10,077,084 B2

1004, 15:30–31). Claim 26 further recites “a door that provides ingress and egress to the interior of the cabin” (Ex. 1001, 18:12–13), and Petitioner contends that “[t]his limitation is identical in scope or nominally broader than the limitation of claim 1,” and that “Modec discloses this limitation for the same reasons set forth above.” *Id.* (citing Ex. 1002 ¶ 115).

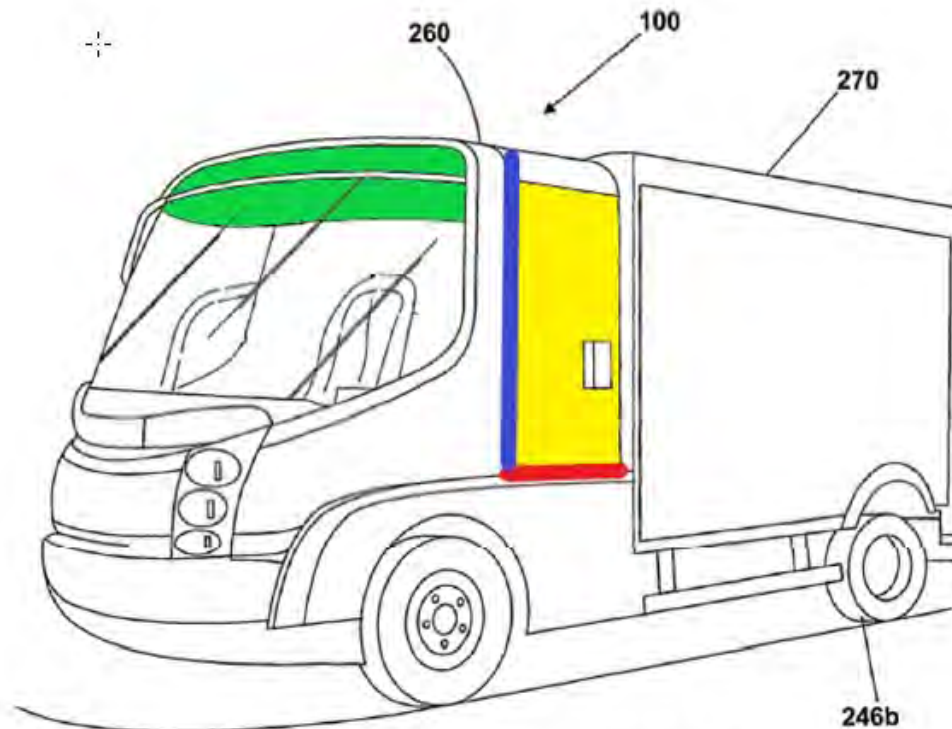
Claim 26 further recites, “the door being located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well.” Ex. 1001, 18:13–15. Petitioner asserts that “[t]his limitation is identical to the limitation of claim 1,” and that “Modec discloses or renders obvious this limitation for the same reasons set forth above.” Pet. 56 (citing Ex. 1002 ¶ 116).

Claim 26 further recites, “and at least a portion of the door being positioned behind the first seat, at least a portion of the first seat is disposed to be forward of a line defining the rearmost portion of the front wheel well.” Ex. 1001, 18:15–19. Petitioner asserts that “[t]his limitation is essentially identical to the limitation of claim 1,” and that for the reasons discussed above, “Modec discloses this similar limitation of claim 26.” Pet. 56 (citing Ex. 1002 ¶ 117).

Claim 26 also recites, “an entryway provided between the first seat and the second seat, wherein the entryway comprises a vertical height extending from a floor of the cabin to at least a top of the first seat or the second seat.” Ex. 1001, 18:20–23. In support of this contention, Petitioner provides an annotated version of Modec’s Figure 1, reproduced below. Pet. 57.

IPR2019-01646

Patent 10,077,084 B2

***Fig. 1***

Petitioner's annotated version of Figure 1 of Modec includes a red line that, according to Petitioner, depicts a floor to support the driver. Pet. 57. Petitioner contends that because the door (yellow) "is at least partially behind the seat, a POSITA would also understand that there is an entryway behind and between the two seats that extends vertically from the floor (red) to the ceiling (green) of the cabin, which, as shown, is above the seat." Pet. 57–58.

Claim 26 further recites, "wherein the entryway provides access to either of the first seat or the second seat." Ex. 1001, 18:24–25. Petitioner argues that to the extent this limitation is not explicit in Modec, Marlowe shows this limitation. Pet. 58–59 (citing Ex. 1008, Fig. 6). More specifically, Petitioner argues Modec implicitly discloses an entryway because the door is at least partially behind the seat. Pet. 57 (citing Ex. 1002

IPR2019-01646

Patent 10,077,084 B2

¶ 118). Alternatively, Petitioner asserts that “[e]ven if Modec does not implicitly disclose that limitation, it would have been obvious, in view of Modec’s disclosure of a door located behind the driver seat, to provide the claimed entryway as the most convenient and easiest pathway for the driver to get from the door to the driver seat upon entering the cabin.” *Id.* at 58 (citing Ex. 1002 ¶ 119). Additionally, Petitioner argues that a “POSITA would be motivated to incorporate Marlowe’s design into Modec because providing a single, central aisle for accessing both seats is more space efficient than providing two separate pathways.” *Id.* at 59 (citing Ex. 1002 ¶ 120); Ex. 1008, Fig. 6.

b. Patent Owner’s Contentions

Patent Owner makes several arguments. First, Patent Owner relies on arguments similar to those discussed above with regard to Petitioner’s challenge of claim 1. *See* Prelim. Resp. 33. In this regard, Patent Owner asserts that Marlowe does not remedy the deficiencies of Modec and Messano discussed above. *Id.*

Second, Patent Owner argues that “the combination of Modec, Messano, and Marlowe fails to disclose or suggest ‘an entryway provided between the first seat and the second seat,’” as recited in claim 26 because Petitioner has not shown that this feature is inherent in Modec or supported this argument otherwise. *See* Prelim. Resp. 34 (“Mr. Baker’s expert analysis is, again, an exact verbatim copy of the Petition, and adds no more rationale or explanation for why a person skilled in the art would ‘understand that there is an entryway **between** the two seats.’”).

IPR2019-01646
 Patent 10,077,084 B2

c. Discussion

Like claim 1, claim 26 also recites, “at least a portion of the first seat is disposed to be forward of a line defining the rearmost portion of the front wheel well.” Ex. 1001, 18:17–20. Petitioner asserts that “[t]his limitation is essentially identical to the limitation of claim 1,” and that for the reasons discussed above, “Modec discloses this similar limitation of claim 26.” Pet. 56 (citing Ex. 1002 ¶ 117). Thus, we understand Petitioner to rely on the same arguments presented for similar limitations recited in claim 1. Namely, that Modec’s Figure 1 discloses the relative positioning of a portion of the seat forward of a rearmost portion of the front wheel well. *See* Pet. 39.

As discussed in detail above, we are not persuaded that the Petition contains sufficient explanation, rationale, and evidence for this position. Petitioner essentially relies on its own annotated Figure 1 that does not clearly show the relative position of the seat. *See* Pet. 39. Furthermore, Mr. Baker’s testimony mirrors that in the Petition and fails to provide any citation to the record or other underlying basis to support the testimony. *See* Ex. 1002 ¶ 82. Also, paragraph 117 of Mr. Baker’s declaration, which is cited on page 56 of the Petition, does not provide any additional evidence beyond that presented for claim 1. Specifically, Mr. Baker testifies that

[t]his limitation is essentially identical to the limitation of claim 1 discussed above in Section VII(B)(1)(h), except the limitation of claim 1 recites “the seat” instead of “the first seat” and includes the additional language “such that the door opens to provide ingress and egress into the cabin from the backside of the seat.” Modec discloses this limitation for the same reasons set forth above in Section VII(B)(1)(h), with Modec’s driver seat being the “first seat” required by claim 26.

Ex. 1002 ¶ 117.

IPR2019-01646
 Patent 10,077,084 B2

Accordingly, we determine that Petitioner has not shown a sufficient basis for instituting trial on the ground that independent claim 26 would have been obvious based on the combination of Modec, Messano, and Marlowe.

3. Claims 7, 8, and 21

Petitioner asserts that claims 7, 8, and 21 of the '084 patent would have been obvious over the combination of Modec, Messano, and Marlowe. Pet. 49–54. Dependent claims 7, 8, and 21 each depend, directly, or indirectly, from independent claim 1. Ex. 1001, 16:36–43, 17:12–15. Petitioner does not rely on Marlowe to correct the deficiencies we have identified with respect to Petitioner's arguments based on Modec for claim 1. Pet. 49–54.

Based on the record before us and the reasons discussed for claim 1, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention that claims 7, 8, and 21 would have been obvious over the combination of Modec, Messano, and Marlowe. *See* Pet. 49–54.

G. Obviousness based on Modec, Messano, and Eltra – Claims 9–11

Petitioner asserts that claims 9–11 of the '084 patent would have been obvious over the combination of Modec, Messano, and Eltra. Pet. 59–63. Dependent claims 9–11 each depend, directly, or indirectly, from independent claim 1. Ex. 1001, 17:44–53. Petitioner does not rely on Messano or Eltra to address the deficiencies we have identified with respect to Petitioner's arguments based on Modec for claim 1. *See* Pet. 59–62 (citing Ex. 1009, 1:4–5, 1:8–15, 1:21–26, 4:12–25; Ex. 1002 ¶¶ 122–127) (relying on Eltra for sliding door features).

IPR2019-01646

Patent 10,077,084 B2

Based on the record before us and the reasons discussed for claim 1, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention that claims 9–11 would have been obvious over the combination of Modec, Messano, and Eltra. *See id.*

H. Obviousness based on Modec, Messano, and Racz – Claim 12

Dependent claim 12 depends directly from independent claim 1. Ex. 1001, 17:54–56. Petitioner relies on its arguments based on Modec for the limitations recited in claim 1 and required in dependent claim 12. *See* Pet. 63–64; Ex. 1010 ¶ 14, Fig. 1; Ex. 1002 ¶ 128 (relying on Racz for a hinged door).

Based on the record before us and the reasons discussed for claim 1, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention that dependent claim 12 would have been obvious over the combination of Modec, Messano, and Racz.

I. Obviousness based on Modec, Messano, and Kia – Claim 13

Dependent claim 13 depends directly from independent claim 1. Ex. 1001, 16:57–61. Petitioner asserts that claim 13 of the '084 patent would have been obvious over the combination of Modec, Messano, and Kia. Petitioner relies on its arguments based on Modec for the limitations recited in claim 1 and required in dependent claim 13. Pet. 64–66; Ex. 1011, 35; Ex. 1002 ¶¶ 130–133 (relying on Kia for a peak load sensor).

Based on the record before us and the reasons discussed for claim 1, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention that claim 12 would have been obvious over the combination of Modec, Messano, and Kia.

IPR2019-01646

Patent 10,077,084 B2

J. Obviousness based on Modec, Messano, and Marlowe – Claim 14

Claim 14 depends from claim 1 and further recites “wherein the door is located approximately at a midpoint of the body of the semi-truck vehicle to provide ingress and egress into the cabin.” Ex. 1001, 16:62–65.

Petitioner asserts that claim 14 of the ’084 patent would have been obvious over the combination of Modec, Messano, and Marlowe because Marlowe discloses a door at located approximately at a midpoint of the body. Pet. 67 (citing Ex. 1008, Fig. 1). Petitioner adds that a “POSITA would have been motivated to modify the combination of Modec and Messano with this obvious design choice in order to provide additional space behind the seat.” *Id.* (citing Ex. 1002 ¶¶ 135–136).

Patent Owner asserts that Petitioner fails to establish that claim 14 would have been obvious “[a]t least because claim 14 depends from and includes all limitations of claim 1.” Prelim. Resp. 36. Patent Owner also asserts that moving the door of Modec to the midpoint of the body would result in the door being near the front of the wheel well as opposed to “adjacent to a rearmost portion of the wheel well,” as required by claim 1. Therefore, if the door of Modec were moved as proposed by Petitioner, the relative positioning limitations would not be met, and Marlowe therefore actually teaches away from the features of claim 7. Prelim. Resp. 36–37.

Petitioner does not rely on Marlowe to correct the deficiencies we have identified with respect to Petitioner’s arguments based on Modec for claim 1. Pet. 66–67 (citing Ex. 1008, Fig. 1). Thus, based on the record before us and the reasons discussed for claim 1, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention

IPR2019-01646
 Patent 10,077,084 B2

that claim 14 would have been obvious over the combination of Modec, Messano, and Marlowe.

K. Obviousness based on Modec, Messano, and Plummer – Claims 17 and 19

Petitioner asserts that claims 17 and 19 of the '084 patent would have been obvious over the combination of Modec, Messano, and Plummer. Pet. 68 (“Plummer discloses, ‘As is indicated in FIG. 5, the interior region of a long-haul truck typically includes a sleeper unit 142 and a driving compartment 144.’”) (citing Ex. 1012, 15:38–40), 69 (“A POSITA would have been motivated to include a ‘bunk bed, a cooling appliance having a volume that is at least 15 cubic feet, and a microwave oven’ with the combination of Modec and Messano for the conventional reasons of providing a place for the driver to sleep and providing appliances for the driver to refrigerate and cook or warm food during long-haul trips.”) (citing Ex. 1002 ¶¶ 142–144); Ex. 1012, 1:15–21.

Patent Owner does not address this argument, except to say that Petitioner fails to establish that claims 17 and 19 would have been obvious “[a]t least because claims 17 and 19 depend from and include all limitations of claim 1.” Prelim. Resp. 38.

Dependent claims 17 and 19 depend directly, or indirectly, from claim 1. Ex. 1001, 17:3–4, 17:7–9. Petitioner does not rely on Plummer to correct the deficiencies we have identified with respect to Petitioner’s arguments based on Modec for claim 1. Pet. 67–69. Thus, based on the record before us and the reasons discussed for claim 1, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention that

IPR2019-01646
Patent 10,077,084 B2

claims 17 and 19 would have been obvious over the combination of Modec, Messano, and Plummer.

L. Obviousness based on Modec, Messano, and Marlowe – Claims 18 and 20

Petitioner asserts that claims 18 and 20 of the '084 patent would have been obvious over the combination of Modec, Messano, and Marlowe. Pet. 69–72 (citing Ex. 1008, 2:41–44, 5:35–36, 5:40–45, Fig. 6; Ex. 1002 ¶¶ 146–147, 149–152).

Dependent claims 18 and 20 depend directly, or indirectly, from claim 1. Ex. 1001, 17:5–6, 17:10–12. Petitioner does not rely on Marlowe to correct the deficiencies we have identified with respect to Petitioner's arguments based on Modec for claim 1. *See* Pet. 69–72. Thus, for the reasons discussed for claim 1, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention that claims 18 and 20 would have been obvious over the combination of Modec, Messano, and Marlowe.

M. Obviousness based on Modec, Messano, and Man Annual Report – Claim 22

Petitioner asserts that claim 22 of the '084 patent would have been obvious over the combination of Modec, Messano, and Man Annual Report. Pet. 73–75 (citing Ex. 1013, 9 as showing a full-size door that extends almost the entire height of the cabin); Ex. 1002 ¶¶ 154–158.

Patent Owner does not address this argument, except to say that Petitioner fails to establish that claim 22 would have been obvious “[a]t least because claim 22 depends from and includes all limitations of claim 1.” Prelim. Resp. 38.

IPR2019-01646

Patent 10,077,084 B2

Petitioner does not rely on Man Annual Report to correct the deficiencies we have identified with respect to Petitioner's arguments based on Modec for claim 1. *See* Pet. 73–75. Thus, based on the record before us and the reasons discussed for claim 1, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention that claims 22 would have been obvious over the combination of Modec, Messano, and Man Annual Report.

N. Obviousness based on Modec, Messano, and Freightliner – Claims 23 and 24

Petitioner asserts that claims 23 and 24 of the '084 patent would have been obvious over the combination of Modec, Messano, and Freightliner. Pet. 76–80; Ex. 1014, 14; Ex. 1019, 5, Ex. 1002 ¶¶ 160–162, 164, 165.

Patent Owner does not address this argument, except to say that Petitioner fails to establish that claims 23 and 24 would have been obvious “[a]t least because claims 23–24 depend from and include all limitations of claim 1.” Prelim. Resp. 38.

Petitioner does not rely on Freightliner to correct the deficiencies we have identified with respect to Petitioner's arguments based on Modec for claim 1. *See* Pet. 76–80. Thus, for the reasons discussed for claim 1, we determine that Petitioner has not established a reasonable likelihood of prevailing in its contention that claims 23 and 24 would have been obvious over the combination of Modec, Messano, and Freightliner.

III. CONCLUSION

After considering the evidence and arguments presented in the Petition, we determine that Petitioner has not demonstrated a reasonable

IPR2019-01646
Patent 10,077,084 B2

likelihood of success in proving that at least one claim of the '084 patent is unpatentable.

Therefore, we do not institute an *inter partes* review on the asserted grounds as to any of the challenged claims.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is *denied* as to all challenged claims of the '084 patent and no *inter partes* review is instituted.

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Exhibit E

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

NIKOLA CORPORATION,
Patent Owner.

Case No. IPR2019-01646
U.S. Patent No. 10,077,084

**PATENT OWNER'S PRELIMINARY RESPONSE TO THE PETITION
FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,077,084**

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TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. STATEMENT OF THE PRECISE RELIEF REQUESTED	4
III. TECHNICAL BACKGROUND AND THE '084 PATENT	4
IV. CLAIMS OF THE '084 PATENT.....	6
V. CLAIM CONSTRUCTION	8
A. “adjacent to” (all claims).....	9
i. “Adjacent” should not be construed because its construction is not material to the obviousness dispute raised by the Petition.....	9
ii. If construction is necessary, the proper construction is “nearby,” not “nearby but not touching”	12
iii. Petitioner’s proposed construction conflicts with other constructions of “adjacent” on similar facts	15
iv. Even if construction is necessary, adding the negative “but not touching limitation” to a construction of “nearby” is not necessary to resolve the obviousness dispute and should therefore be avoided.....	16
B. “electric drive train” (all claims).....	17
VI. LEVEL OF ORDINARY SKILL IN THE ART	17
VII. LEGAL STANDARD	17
VIII. ARGUMENT.....	18
A. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec and Messano Render Obvious Claims 1- 5, 15-16, and 25 (Ground 1).....	19
i. Petitioner cannot demonstrate a reasonable likelihood that it can prevail in proving that Modec in view of Messano discloses the relative positioning limitations.....	20

ii.	Petitioner’s arguments regarding the relative positioning limitations are of little value because they are conclusory and rely solely on FIG. 1 of Modec, which is a rough general illustration not drawn to scale	24
iii.	Petitioner cannot demonstrate a reasonable likelihood that it can prevail in proving that Modec teaches or suggests “wherein the door is the foremost door providing ingress or egress into the interior of the cabin”	27
iv.	Messano does not cure the deficiencies of Modec regarding claim 1, and Petitioner has not met its burden on claims 2-5, 15-16, and 25 because they include all limitations of claim 1	28
v.	Petitioner has also failed to meet its burden as to Claims 3 and 25 because the cabin of Modec would not function in the hybrid combustion engine vehicle of Messano	29
B.	Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Future Truck Report Render Obvious Claims 13 (Ground 2)	33
C.	Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Marlowe Render Obvious Claims 7, 8, 21, and 26 (Ground 3)	33
D.	Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Eltra Render Obvious Claims 9-11 (Ground 4)	35
E.	Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Racz Render Obvious Claim 12 (Ground 5)	36
F.	Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Kia Render Obvious Claim 13 (Ground 6)	36
G.	Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Marlowe Render Obvious Claim 14 (Ground 7).....	36
H.	Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Plummer Render Obvious Claims 17 and 19 (Ground 8)	38

I. Petitioner Fails to Establish that There Is a Reasonable
Likelihood that Modec, Messano, and Marlowe Render
Obvious Claims 18 and 20 (Ground 9)38

J. Petitioner Fails to Establish that There Is a Reasonable
Likelihood that Modec, Messano, and Man Annual Report
Render Obvious Claim 22 (Ground 10)38

K. Petitioner Fails to Establish that There Is a Reasonable
Likelihood that Modec, Messano, and Freightliner Render
Obvious Claims 23-24 (Ground 9).....38

IX. CONCLUSION.....39

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>Arendi S.A.R.L. v. Apple Inc.</i> , 832 F.3d 1355 (Fed. Cir. 2016)	26, 28
<i>Boss Industries, Inc. v. Yamaha Motor Corp. U.S.A., Inc.</i> , 333 Fed.Appx. 531 (Fed. Cir. 2009).....	16
<i>Free Motion Fitness, Inc. v. Cybex Intern., Inc.</i> , 423 F.3d 1343 (Fed. Cir. 2005)	15, 16
<i>Graham v. John Deere Co.</i> , 383 U.S. 1, 148 USPQ 459 (1966)	18
<i>Hockerson–Halberstadt, Inc. v. Avia Group Int’l</i> , 222 F.3d 951 (Fed. Cir. 2000).....	22, 27
<i>In re ICON Health & Fitness, Inc.</i> , 496 F.3d 1374 (Fed.Cir.2007).....	32, 37
<i>In re Kahn</i> , 441 F.3d 977 (Fed. Cir. 2006).....	18, 30, 32
<i>In re Oelrich</i> , 666 F.2d 578 (CCPA 1981)	34
<i>Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.</i> , 821 F.3d 1362 (Fed. Cir. 2016)	18
<i>KSR Int’l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007).....	18
<i>Liebel–Flarsheim Co. v. Medrad, Inc.</i> , 358 F.3d 898 (Fed.Cir.2004).....	13
<i>Nidec Motor Corporation v. Zhongshan Broad Ocean Motor Co. Ltd. Matal</i> , 868 F.3d 1013 (Fed. Cir. 2017)	9, 16
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005)	8, 9, 13
<i>Rexnord Corp. v. Laitram Corp.</i> , 274 F.3d 1336 (Fed.Cir.2001).....	12
<i>Sinorgchem Co., Shandong v. Int’l Trade Comm’n</i> , 511 F.3d 1132 (Fed.Cir.2007).....	15
<i>Symantec Corp. v. Computer Associates Intern., Inc.</i> , 522 F.3d 1279 (Fed. Cir. 2008)	15
<i>TQ Delta, LLC v. CISCO Systems, Inc.</i> , 942 F.3d 1352 (Fed. Cir. 2019)	26

<i>Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.</i> , 200 F.3d 795 (Fed. Cir. 1999).....	9, 11
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Statutes

35 U.S.C. § 312(a)(3).....	18
35 U.S.C. § 314(a)	17
35 U.S.C. § 316(e)	17

Regulations

37 C.F.R. § 42.100(b)	8
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I. INTRODUCTION

Nikola Corporation (“Nikola” or “Patent Owner”) submits this Preliminary Response to the Petition for *Inter Partes* Review (the “Petition” or “Pet.”) of U.S. Patent No. 10,077,084 (the “’084 patent”) filed by Tesla, Inc. (“Tesla” or “Petitioner”) on September 24, 2019.

The Petition fails to demonstrate a reasonable likelihood that the Petitioner would prevail with respect to any claim of the ’084 patent. Specifically, no reference cited in the Petition discloses or suggests the following claim features required by independent claim 1:

1. “[A]t least a portion of the door being positioned behind the seat and;”
2. “at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well;”
3. “such that the door opens to provide ingress and egress into the cabin from a backside of the seat.”

Ex. 1001, claim 1 (the “relative positioning limitations”).¹ The Petition insists that the relative positioning limitations are “trivial” and “not innovative” but, presumably

¹ This language is found in independent claim 1 and claims 2-15 depend from and include all limitations of claim 1. Independent claim 26, the only other independent claim, includes nearly identical, though not exact, versions of these limitations.

after performing an extensive search for prior art, Petitioner cites only a single reference as allegedly disclosing those limitations. Because that reference, Modec,² does not disclose or suggest the precise relative positioning of the seat, wheel well, and door required by all claims of the '084 patent, the Petition must be denied.

The Petition relies exclusively on FIG. 1 to support of its assertion that Modec discloses the relative positioning limitations:

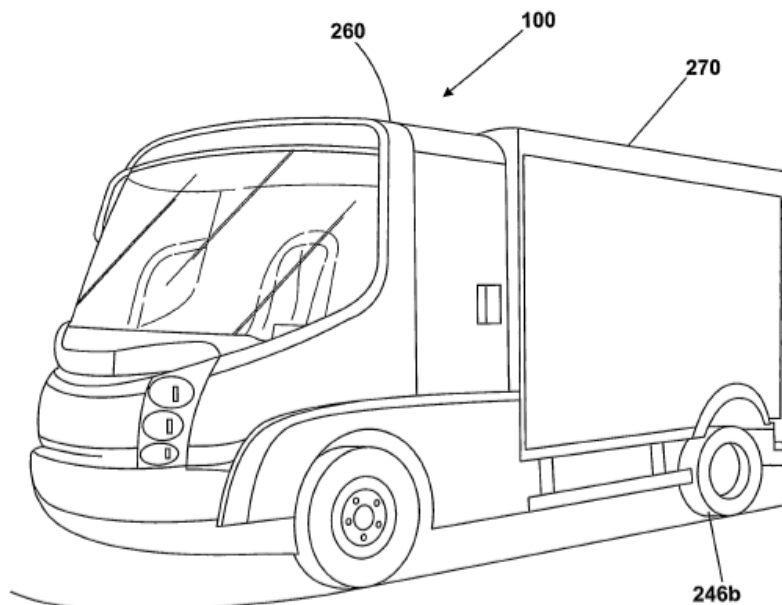


Fig. 1

As seen here, FIG. 1 shows a rough drawing of a vehicle from an unspecified angle and height, with no dimensions or markings showing or suggesting the relative positions of the seat, wheel well, and door. Notably, the Petition cites no written description describing the relative positions of the seat, wheel well, and door, and

² WO 2009/001086 to Modec (“Modec”).

Modec provides no such description. The only other Modec disclosure cited for this limitation provides no information on the relative positioning of the elements in FIG. 1: “The door module can then, optionally, unlock a door lock mechanism 940 associated with that module to allow the driver to access the vehicle through the door.” Ex. 1004 at 22:18-20.³ The relevant portion of Petitioner’s expert declaration, like the Petition itself, merely repeats the exact claim language with no supporting analysis or explanation, and therefore should be afforded no weight.

To summarize, the entire Petition rests on a single rough figure, FIG. 1 of Modec, to satisfy what the Petition alleges are the key limitations of the two independent claims. That figure is not marked with dimensions and Modec does not assert that the figure is drawn to scale. Although Patent Owner does not dispute that Modec FIG. 1 discloses a wheel well, a door, and a seat, neither FIG. 1 nor any other disclosure in Modec teaches or suggests “at least a portion of the door being positioned behind the seat,” “at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well,” or “such that the door opens to provide ingress and egress into the cabin from a backside of the seat.” No amount of bluster or hand waving can distract from that clear deficiency in

³ This Response uses an abbreviated citation method for patent references in which, e.g., a citation of 22:18-20 refers to column 22, ll. 18-20.

Modec. None of the other references cited in the Petition remedy these deficiencies of Modec, and the Petition does not so allege.

For at least these reasons, the Petition does not establish a reasonable likelihood that any claim of the '084 patent is invalid and therefore must be denied.

II. STATEMENT OF THE PRECISE RELIEF REQUESTED

Patent Owner requests that the Board deny institution of the Petition with respect to all challenged claims and all asserted grounds. A full statement of the reasons for the relief requested is set forth in Sections V. and VIII.

III. TECHNICAL BACKGROUND AND THE '084 PATENT

The '084 patent discloses an electric powered semi-truck that increases user safety by simplifying entry into a cabin of the semi-truck and by leveraging the lack of a traditional combustion engine to locate the driver's seat closer to the front of the cabin such that the driver has greatly increased visibility compared to drivers of prior art semi-trucks.

The '084 patent explains that “vehicle doors, and particularly semi-truck doors, often provide immediate access to a seat located in the body of the vehicle,” and “require a user to enter or exit the vehicle at an angle that may be uncomfortable or even dangerous.” Ex. 1001, 1:36-40. Because “[s]emi-truck doors and seats are located a significant distance above the ground,” “a user must be cautious to avoid injury when ascending the steps to the semi-truck door, opening the hinged semi-

truck door, and sliding on to the seat while closing the hinged door.” *Id.* at 1:40-45. The ’084 patent solves these problems by positioning the door such that at least a portion of the door is behind the seat so that “the door opens to a landing . . . and a person may comfortably step into the vehicle body 102 while facing forward into the vehicle body 102.” *Id.* at 6:11-14. In the claimed invention, the door is also positioned “adjacent to a rearmost portion of a front wheel well.” *Id.* at 16:10-12; *see also* 5:23-25 and FIG. 1.

The ’084 patent also notes that “the inclusion of an electric motor, and the elimination of a standard combustion engine, may allow for the reconfiguration of the layout and structure of a standard semi-truck” in ways that are “advantageous to a user.” *Id.* at 4:22-28. After experimenting and exploring optimal placement, the inventors of the ’084 patent discovered that one such advantage is that “the at least one seat [can] be located at a position nearer the front of the vehicle body 102 than in a conventional semi-truck.” *Id.* at 4:28-32. Specifically, the inventors found that the seat could be located at least partially above the wheel well, and thereby the driver would be positioned closer to the windshield, providing several advantages. *Id.* at 7:36-38. “[L]ocating a seat 510 near the front of the vehicle body 102 and providing a panoramic view of the surroundings will increase safety and visibility when operating the vehicle.” *Id.* at 7:42-45.

IV. CLAIMS OF THE '084 PATENT

The '084 patent contains twenty-six (26) claims. Ex. 1001 at 15:64-18:26. Claims 1 and 26 are independent and claims 2-25 depend from and add limitations to claim 1. Challenged independent claims 1 and 26 are reproduced below for ease of reference.

Claim 1

1. A semi-truck vehicle comprising:

an electric drive train;

a body;

a cabin located within the body of the semi-truck vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person;

a seat located in the interior of the cabin that is configured for seating a user; and

a door comprising a width extending a horizontal length of the door, wherein the door provides ingress and egress to the interior of the cabin of the semi-truck vehicle;

wherein the door is located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and the width of the door is disposed between the frontmost side

of the door and a rearmost side of the door, at least a portion of the door being positioned behind the seat and at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well such that the door opens to provide ingress and egress into the cabin from a backside of the seat; and

wherein the door is the foremost door providing ingress or egress into the interior of the cabin.

Claim 26

26. A semi-truck vehicle comprising:

an electric drive train;

a body;

a cabin located within the body of the vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person;

a first seat and a second seat located in the interior of the cabin;

a door that provides ingress and egress to the interior of the cabin, the door being located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and

at least a portion of the door being positioned behind the first seat, at least a portion of the first seat is disposed to be forward of a line defining the rearmost portion of the front wheel well; and

an entryway provided between the first seat and the second seat, wherein the entryway comprises a vertical height extending from a floor of the cabin to at least a top of the first seat or the second seat;

wherein the entryway provides access to either of the first seat or the second seat.

V. CLAIM CONSTRUCTION

Petitioner seeks construction of two claim terms: 1) “Adjacent to” and 2) “electric drive train.” Both terms appear in all claims of the ’084 patent.

The claims here are to be construed, if necessary, under the *Phillips* standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc); *see* 37 C.F.R. § 42.100(b). Under that standard, the words of a claim generally are given their ordinary and customary meaning. *Phillips*, 415 F.3d at 1312. “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313. The person of ordinary skill in the art is deemed to read the claim term not

only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. *Id.*

The Board need only construe terms “that are in controversy, and only to the extent necessary to resolve the controversy.” *Nidec Motor Corporation v. Zhongshan Broad Ocean Motor Co. Ltd. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). When construction of a claim term is not “material to the [obviousness] dispute,” that term need not be construed. *Id.*

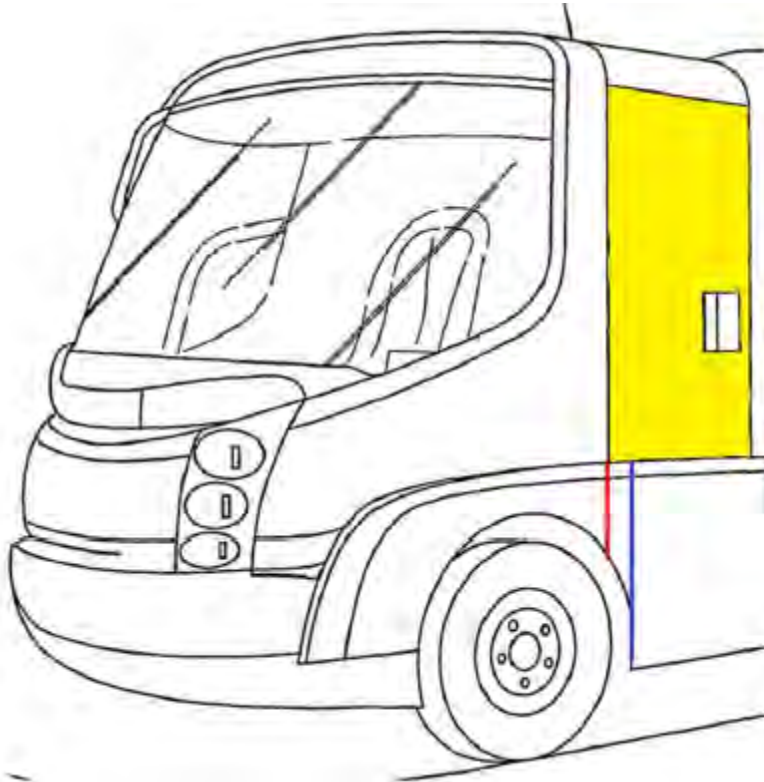
A. “adjacent to” (all claims)

Petitioner asserts that the proper construction of “adjacent to” is “nearby but not touching.” Petitioner’s proposed construction should be rejected for several reasons.

i. “Adjacent” should not be construed because its construction is not material to the obviousness dispute raised by the Petition

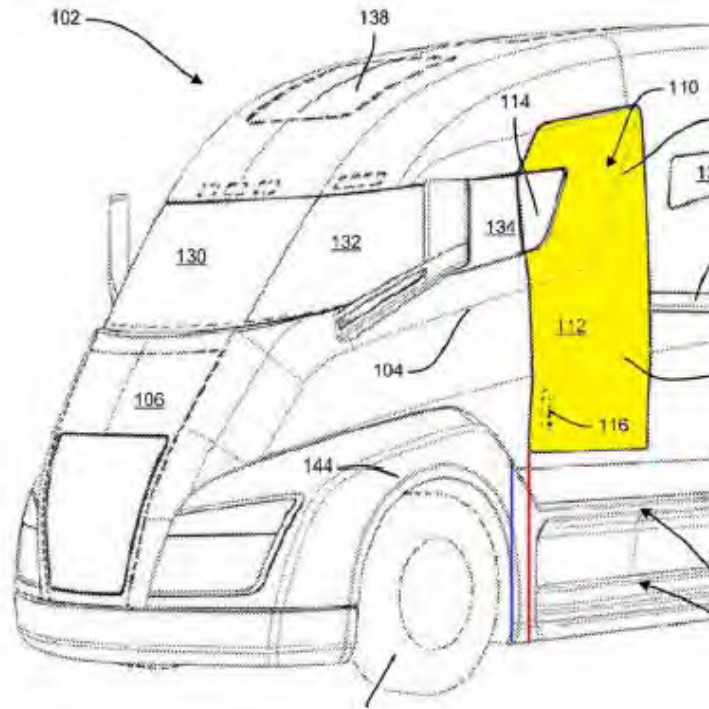
First, the construction of “adjacent to” is not material to the validity determination sought by the Petition and therefore the term need not be construed to resolve this Petition. The term “adjacent to” is used in each of the two independent claims of the ’084 patent to describe the relative positions of the door and the front wheel well. As recited in claim 1, “the door is located on the body such that the frontmost side of the door is adjacent to a rearmost portion of a front wheel well.”

(emphasis added).⁴ The Petition cites only one reference, Modec, as disclosing the “adjacent to” limitation. *See* Pet. at pp. 34-37 and 560. Specifically, the Petition presents a marked-up version of Modec FIG. 1 to show that the door is adjacent to a front wheel well:



Pet. at 48-49; *see* Ex. 1004. FIG. 1. As the Petition notes, the position of the Modec door relative to a front wheel well is nearly identical to the relative position of those elements as shown in FIG. 1 of the '084 patent:

⁴ Claim 26 of the '084 patent recites a nearly identical limitation: “the door being located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well.”



Pet. at 50; *see* Ex. 1004. FIG. 1. Patent Owner does not dispute that, under the ordinary and customary meaning of “adjacent to,” Modec discloses a door that is “adjacent to” a rearmost portion of a front wheel well. As a result, there is no need to construe “adjacent to” because there is no dispute as to whether Modec discloses the “adjacent to” limitation. *See Vivid Techs.*, 200 F.3d at 803; *see also* Pet. at 12 (noting that “the Board need only construe claim terms as necessary to resolve the parties’ disputes” but failing to set forth any reason why construction of “adjacent to” addresses any dispute raised in the Petition).

That is especially true where, as here, Petitioner attempts to read into the claims a negative limitation that is not found in or supported by the specification. As detailed below, the ’084 patent never uses the phrase “but not touching” and does

not support including that phrase in any construction of “adjacent to.” Coupled with the irrelevance of Petitioner’s proposed construction to the obviousness dispute at hand, this raises questions about the ultimate purpose of Petitioner’s proposed construction and the Petition as a whole. For example, Petitioner uses over three full Petition pages arguing for a construction of “adjacent to” that would import an unsupported negative limitation into all claims of the ’084 patent, but only dedicates two short paragraphs to its obviousness case for the relative positioning limitations, which Petitioner asserts are the limitations most key to the obviousness analysis. For at least these reasons, “adjacent to” need not and should not be construed here.

ii. If construction is necessary, the proper construction is “nearby,” not “nearby but not touching”

Second, if the Board finds that construction of “adjacent to” is necessary, the proper construction of the term is “nearby.” Petitioner’s proposed construction, which attempts to import the unsupported negative limitation “but not touching” into the claims, is not supported, much less required, by the specification of the ’084 patent or the ordinary and customary meaning of the term “adjacent to.” The ’084 patent does not suggest that the term “adjacent to” has a specialized meaning in the relevant art, and neither the Petitioner nor its expert alleges any such special meaning. *See* Pet. at 8-12; *see also* Ex. 1002 at ¶¶ 35-42. Thus, the term should be given the “full range of its ordinary meaning” (*Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001)) as demonstrated by the intrinsic evidence and

dictionary definitions, which “are often useful to assist in understanding the commonly understood meaning of words.” *Phillips*, 415 F.3d at 1322.

The specification passages and figures cited in the Petition are consistent with “adjacent to” meaning “nearby.” Nothing in the specification of the ’084 patent dictates or supports reading the negative limitation “but not touching” into the claims. The intrinsic evidence cited by Petitioner merely shows that, in some embodiments of the invention, a door is spaced apart from the wheel well. There is nothing in the intrinsic record that *requires* separation between the door and wheel well, and the Petition cites no evidence that Patent Owner intended to limit the claims to any particular embodiment described in the specification. Thus, the intrinsic evidence does not support reading “but not touching” into the claims. *See Liebel–Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004) (“it is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.”)

Moreover, the dictionary cited by the Petitioner’s expert does not support the inclusion of “but not touching” in the construction. In relevant part, that dictionary presents the following definitions of “adjacent”:

ad·ja·cent *adjective* la-ˈjā-səntē

1 a : not distant or far off

<the city square and the *adjacent* streets>

<Chicago and *adjacent* suburbs>

: nearby but not touching

< ... only two species exist, and they occur on the South Island of New Zealand and on *adjacent* islands. — Benjamin B. Normark, *Natural History*, September 2004>

b : having a common border : **ABUTTING, TOUCHING**

<two *adjacent* properties>

< ... fishes only in the waters immediately *adjacent* to the island. — Michael Rothschild, *Bionomics*, 1990>

: living nearby or sitting or standing relatively near or close together

<hills ... composed of oyster shells ... the *adjacent* inhabitants burn them — Mark van Doren>

c : immediately preceding or following with nothing of the same kind intervening

< ... it was attempted by a would-be bank robber who mistook the entrance to an *adjacent* store for his objective. — William Murray, *The New Yorker*, 5 Oct. 1987>

2 of two angles : having the same vertex and one side in common

Ex. 1016. As seen here, the primary definition of “adjacent” is “not distant or far off,” i.e., nearby. *Id.* The dictionary also presents two definitions, “having a common border” and “having...one side in common” that are directly opposed to Petitioner’s proposed construction. Thus, while the definitions cited by Petitioner make it clear that objects that are “nearby but not touching” are adjacent, the fact that two objects have a common border (i.e., they are touching) does not render those objects non-adjacent. Other dictionary definitions also support an ordinary and customary meaning of “adjacent” that includes situations where there is “nothing in between” two objects and when objects are “next to” each other. *See* Ex. 2001 and

2002. In fact, the Petitioner’s own expert⁵ admits that the definitions “not distant or far off” and “nearby but not touching” are both consistent with the ordinary meaning of adjacent and the usage of the phrase in the specification, and that only the definition that *requires* a common border is inconsistent with the specification’s usage of “adjacent to.” Ex. 1002 at ¶ 36. Thus, if construction of “adjacent to” is deemed necessary, the proper construction is “nearby.”

iii. Petitioner’s proposed construction conflicts with other constructions of “adjacent” on similar facts

Third, at least two cases have construed “adjacent” in a situation where, as here, the term was not alleged to have a meaning specific to a particular art. The courts in those cases construed “adjacent” in a manner that is consistent with “nearby” and inconsistent with Petitioner’s proposed construction of “nearby but not touching.” In *Free Motion Fitness, Inc. v. Cybex Intern., Inc.*, 423 F.3d 1343, 1349

⁵ Little or no weight should be accorded to expert testimony on claim construction where, as here, the expert does not allege that a term has a special or accepted meaning in the art. *See Symantec Corp. v. Computer Associates Intern., Inc.*, 522 F.3d 1279, 1290-1291 (Fed. Cir. 2008) (“Such expert testimony, which does not identify the ‘accepted meaning in the field’ to one skilled in the art, is unhelpful.”) (citing *Sinorgchem Co., Shandong v. Int’l Trade Comm’n*, 511 F.3d 1132, 1137 n. 3 (Fed. Cir. 2007)).

(Fed. Cir. 2005), the Federal Circuit construed “adjacent” to mean “not distant” when it found nothing in the record that would exclude from the construction a situation where two objects of the same kind were touching. *Id.* In *Boss Industries, Inc. v. Yamaha Motor Corp. U.S.A., Inc.*, 333 Fed.Appx. 531, 541 (Fed. Cir. 2009), the court upheld the district court’s construction of “adjacent” as “next to or adjoining,” noting that “adjacent” is a commonly understood word.

iv. Even if construction is necessary, adding the negative “but not touching limitation” to a construction of “nearby” is not necessary to resolve the obviousness dispute and should therefore be avoided

Finally, as described above, the “but not touching” portion of Petitioner’s construction has no bearing on whether Modec discloses the “adjacent to” limitation – Modec would disclose that limitation regardless of whether “adjacent to” was construed to mean “nearby” or “nearby but not touching.” It therefore appears likely that Petitioner is asking the Board to include the “but not touching” limitation for purposes unrelated to the invalidity positions presented by the Petition. Thus, if construction of “adjacent to” is deemed necessary, there is no need to limit “adjacent” to a narrower construction than “nearby” because the parties agree on that portion of the construction and adding “but not touching” does not help in resolving the obviousness dispute raised by the Petition.” *See Nidec Motor*, 868 F.3d at 1017 (“Board need only construe terms ‘only to the extent necessary to resolve the controversy.’”).

B. “electric drive train” (all claims)

Patent Owner agrees with Petitioner that this limitation “would be readily understood by a POSITA and does not need an express construction.” Pet. at 12. As such, no construction is necessary. Moreover, Petitioner’s proposed clarification does nothing to aid in resolving the obviousness dispute raised by the Petition, and the Board therefore need not construe or clarify this term.

VI. LEVEL OF ORDINARY SKILL IN THE ART

Patent Owner takes no position at this time on the level of ordinary skill in the art. This is not to be taken as a concession that Patent Owner either agrees or disagrees with Petitioner’s proposed level of ordinary skill in the art.

VII. LEGAL STANDARD

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a):

Threshold.--The Director may not authorize an inter partes review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

To prevail post-institution, the Petitioner must prove unpatentability by “a preponderance of the evidence.” 35 U.S.C. § 316(e). Therefore, *inter partes* review should be instituted only when the Petition and evidence submitted therewith

demonstrates a reasonable likelihood that the Petitioner will be able to prove unpatentability by a preponderance of the evidence.

The Petition presents eleven grounds, each based on obviousness under 35 U.S.C. § 103. The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966); *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 399 (2007).

The Petition's evidence must address every limitation of every challenged claim and must identify “with particularity” the “evidence that supports the grounds for the challenge to each claim.” *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1362, 1369 (Fed. Cir. 2016); 35 U.S.C. § 312(a)(3). “[R]jections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

VIII. ARGUMENT

The Petition does not establish a reasonable likelihood that any claim of the '084 patent is unpatentable. The Petition should therefore be denied with respect to all challenged claims and grounds.

A. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec and Messano Render Obvious Claims 1-5, 15-16, and 25 (Ground 1)

Petitioner fails to meet its burden with respect to Ground 1 of the Petition. As noted in the Petition, the '084 patent was allowed after the following limitations were added to claim 1 (referred to herein as the “relative positioning limitations”):

4. “[A]t least a portion of the door being positioned behind the seat and;”
5. “at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well;” and
6. “such that the door opens to provide ingress and egress into the cabin from a backside of the seat.”

Pet. at 4-5. In contrast to the Petition’s allegations, these limitations are far from trivial – they were not taught or suggested by the prior art considered by the Examiner during original prosecution and they are not taught or suggested by Modec, the only reference cited in the Petition as allegedly disclosing them, or any other reference cited in the Petition.⁶ Modec in view of Messano also fails to teach

⁶ Ground 1 of the Petition combines U.S. Patent No. 7,338,335 to Messano (“Messano,” Ex. 1005) with Modec, but the Petition relies on Messano exclusively to show an electric semi-truck and does not assert that Messano discloses any of the relative positioning limitations. *See* Pet. at 27 and 39.

or suggest “wherein the door is the foremost door providing ingress or egress into the interior of the cabin,” as recited in claim 1.

For at least these reasons, Petitioner cannot demonstrate a reasonable likelihood that it will prevail in proving, by a preponderance of the evidence, that Modec discloses those features.

i. Petitioner cannot demonstrate a reasonable likelihood that it can prevail in proving that Modec in view of Messano discloses the relative positioning limitations

Modec does not teach or suggest the relative positioning limitations. The Petition and the accompanying expert declaration rely exclusively on a marked-up version of Modec FIG. 1 provided by Petitioner’s expert, Mr. Baker:

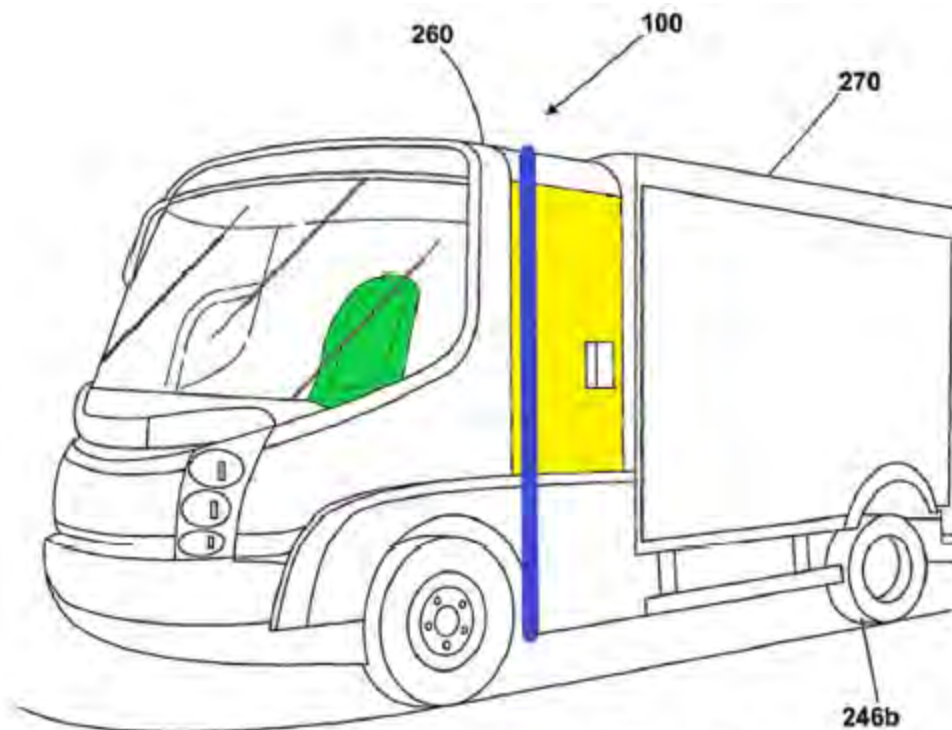


Fig. 1

Pet. at 39; Ex. 1002 at ¶ 53. This is the beginning and end of the evidence submitted by Petitioner. The Petition first states that FIG. 1 shows that “at least a portion of the door [yellow]” is “positioned behind the seat [green].” *Id.* But there is no information in FIG. 1 that would allow a person of ordinary skill in the art to arrive at that conclusion. The specification of Modec is silent as to the angle or perspective FIG. 1 is intended to represent. But it is apparent from the relative sizing of the front and rear wheels (with the rear wheel smaller than the front) and other drawing features (e.g., that a large portion of the front face of the cabin is visible while none of the back face is visible), that FIG. 1 is drawn from the perspective of a person standing some distance away from a front corner of the vehicle, and not directly from the side of the vehicle.

Thus, FIG. 1 merely discloses that the seat is to the left of the door in the angled drawing of FIG. 1. FIG. 1 provides no information as to whether any portion of the door is positioned **behind** the seat, i.e., between the seat and a rear face of the cabin. To discern that, the drawing would need to show the perspective of a person standing directly to the side or from directly above the cab, or specific relative positioning would need to be marked on the figure or described in the specification. None of those circumstances apply here. For at least the same reasons, FIG. 1 provides no information regarding whether “the door opens to provide ingress and egress into the cabin **from a backside of the seat,**” as recited in claim 1.

Similarly, FIG. 1 cannot teach or suggest that at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well. The most that can be deduced from Mr. Baker's marked-up FIG. 1 is that the visible portion of the seat appears to the left of the blue line when viewing the figure from left to right. FIG. 1 provides no information as to whether any portion of the seat is actually positioned **forward of** a line defining the rearmost portion of the wheel well, i.e., that "at least a portion of the seat is positioned between the front face of the cabin and the rearmost portion of the wheel well," as recited in claim 1.

The inadequacy of the Petition's analysis is especially evident, where, as here, the invalidity position relies solely on a rough drawing. Modec does not disclose that FIG. 1 is drawn to scale or that it is intended to be an accurate representation of the position of any feature of the cabin relative to any other feature. No detail is given about the angle or perspective from which FIG. 1 is drawn. In such situations, opinions based on visual inspection of a drawing are of little value. *See Hockerson–Halberstadt, Inc. v. Avia Group Int'l*, 222 F.3d 951, 956 (Fed. Cir. 2000) (holding that when the reference does not disclose that drawings are to scale and is silent as to dimensions, "arguments based on measurement of a drawing are of little value").

No other disclosure in Modec sheds light on FIG. 1. FIG. 1 is discussed in only three sentences of the Modec specification:

- "Figure 1 shows an electric vehicle 100." Ex. 1001 at 14.

- “The vehicle in this example is a specialist delivery vehicle, but through a simple change to the vehicle body it could be a box van or minibus or any other commercial or domestic use vehicle.” Ex. 1001 at 14-15.
- “At the rear the chassis carries a body 270 such as a closed van body as shown in Figure 1 (although other bodies can be provided).” Ex. 1001 at 16.

This lack of detail and precision regarding FIG. 1 makes sense, because Modec is primarily concerned with the specifics of a “control system for a battery powered vehicle.” Ex. 1001 at Abstract, Title. Indeed, the other nine figures and the vast majority of the thirty-page specification of Modec explain how various electrical, hardware, and software systems interact – the cabin layout is irrelevant to the Modec disclosure. There would have been no reason for an illustrator to attempt to draw FIG. 1 to scale or to accurately map out the relative positioning of elements in the vehicle’s cabin. Thus, even if Modec FIG. 1 did show the relative positioning limitations, which it does not, those relative positions could not be relied upon because there is no indication that the figure is intended to provide accuracy in cabin layout. Moreover, even if FIG. 1 did clearly show relative positions of specific elements, which it does not, those positions could be merely drawing errors or drafting mistakes, which is exactly the reason the Federal Circuit has repeatedly warned that drawings are of little probative value when not drawn to scale or accompanied by dimensions.

- ii. Petitioner’s arguments regarding the relative positioning limitations are of little value because they are conclusory and rely solely on FIG. 1 of Modec, which is a rough general illustration not drawn to scale**

The Petition cites FIG. 1 of Modec as disclosing all three of the relative positioning limitations. Pet. at 39-40. Petitioner cites no supporting specification passages other than an irrelevant section that “discloses that the door can be unlocked ‘to allow the driver to access the vehicle through the door.’” Pet. at. 39-40; citing Ex. 1004 at 22:18-20. To emphasize the paucity of analysis and lack of supporting rationale presented for the mapping of Modec to the relative positioning limitations, the complete section of the Petition addressing these limitations is reproduced below.

- i. “at least a portion of the door being positioned behind the seat and at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well such that the door opens to provide ingress and egress into the cabin from a backside of the seat”

The following annotated Figure 1 of Modec shows that “at least a portion of the door [yellow]” is “positioned behind the seat [green] and at least a portion of the seat [green] is disposed to be forward of a line defining the rearmost portion of the wheel well [blue line extended from rearmost edge].” Ex. 1002 ¶ 82.

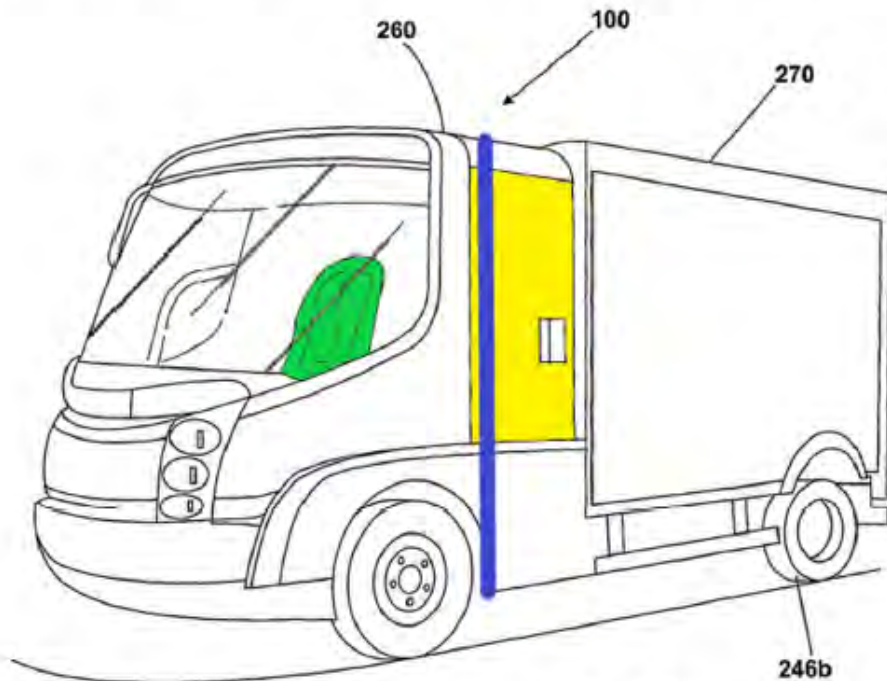


Fig. 1

Modec further discloses that the door can be unlocked “to allow the driver to access the vehicle through the door” (Ex. 1004 at 22:18-20), thereby establishing that “the door opens to provide ingress and egress into the cabin.” As explained above, the door is positioned behind the seat. Therefore, ingress and egress into the cabin, as provided by the door, can only be “from a backside of the seat.” Ex. 1002 ¶ 83.

Pet. at 39-40.⁷ This passage amounts to nothing more than a recitation of the exact claim language prefaced by “Modec shows that... .” The second paragraph demonstrates only that the door opens to allow a user to enter some portion of the cabin, which is uncontested as well as irrelevant to establishing whether the relative positioning limitations are shown by Modec.

The relevant portion of the declaration submitted by Tesla’s expert, Mr. Baker, is an exact, verbatim copy of the Petition (or vice versa). Ex. 1002 at ¶¶ 82-83. The declaration does not provide any explanation of how the expert was able to conclude from FIG. 1 that the three relative positioning limitations are taught or suggested by Modec. Moreover, neither the Petition nor the expert declaration alleges that Mr. Baker’s interpretation of FIG. 1 is based on his special knowledge as one skilled in the art, and Mr. Baker does not purport to be an expert on drawing interpretation. Mr. Baker is merely offering an unsupported and conclusory interpretation of a roughly drawn figure. This conclusory testimony cannot qualify as substantial evidence of invalidity, much less meet the higher preponderance of the evidence standard Petitioner would face post-institution. *See TQ Delta, LLC v. CISCO Systems, Inc.*, 942 F.3d 1352, 1358-1359 (Fed. Cir. 2019) (“Conclusory expert testimony does not qualify as substantial evidence.”); *see also Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1366 (Fed. Cir. 2016) (conclusory statements by expert

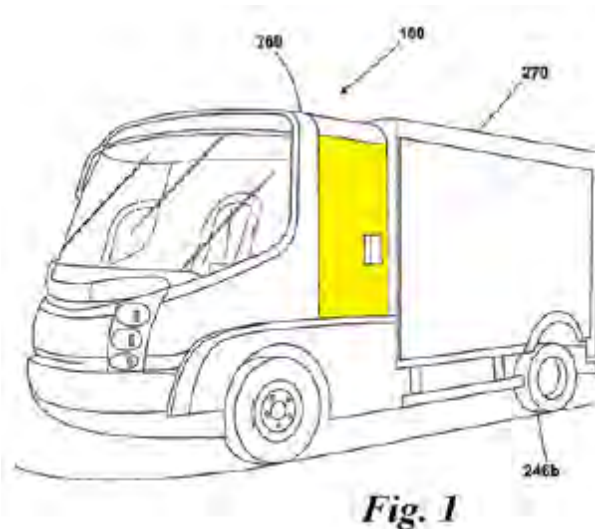
⁷ The colored lines on FIG. 1 were added by the Petitioner’s expert. Ex. 1002 ¶ 82.

in support of obviousness analysis may not be relied upon). This is especially true when the conclusory testimony is based on a rough drawing that is not drawn to scale and is not described in any detail in the specification. *See Hockerson–Halberstadt, Inc.*, 222 F.3d at 956. For these reasons, neither the Petition nor Mr. Baker’s declaration provide any evidence that contradicts the plain appearance of FIG. 1 or that demonstrate a reasonable likelihood that Petitioner will succeed in proving that Modec discloses the relative positioning limitations.

iii. Petitioner cannot demonstrate a reasonable likelihood that it can prevail in proving that Modec teaches or suggests “wherein the door is the foremost door providing ingress or egress into the interior of the cabin”

As detailed above, FIG. 1 of Modec is not drawn to scale and is not described with any specificity in the specification. Moreover, FIG. 1 of Modec shows only one side of the cabin and is completely silent as to whether there are doors on the opposite side of the vehicle. None of the other figures of Modec show the opposite side of the cabin. For at least those reasons, Modec provides no information that would allow one skilled in the art to conclude that the door shown in FIG. 1 is the “foremost door into the interior of the cabin,” as required by claim 1. At most, FIG. 1 allows one of ordinary skill in the art to conclude that the door in FIG. 1 is the foremost door on the **driver’s side** of the cabin, which does not satisfy this limitation. The Petition and Mr. Baker’s expert declaration provide no explanation or rationale for concluding that the door in FIG. 1 is the foremost door on the cabin,

merely stating that “Figure 1 of Modec shows that ‘the door [yellow] is the foremost door’” and presenting another marked-up version of FIG. 1 of Modec:



Pet. at 40; Ex. 1002 at ¶ 84. Such conclusory testimony, especially when based on a rough figure, cannot be relied on to buttress Petitioner’s otherwise unsupported mapping of Modec to this limitation. *Arendi S.A.R.L.*, 832 F.3d at 1366. For at least these reasons, Modec fails to disclose “wherein the door is the foremost door providing ingress or egress into the interior of the cabin.”

iv. Messano does not cure the deficiencies of Modec regarding claim 1, and Petitioner has not met its burden on claims 2-5, 15-16, and 25 because they include all limitations of claim 1

As detailed previously, Messano fails to cure the deficiencies of Modec at least because Messano does not teach or suggest, whether alone or in combination with Modec, the relative positioning limitations or “wherein the door is the foremost door providing ingress or egress into the interior of the cabin,” as required by claim

1. Petitioner has therefore failed to establish a reasonable likelihood that it can prevail in showing that Modec in view of Messano renders claim 1 obvious. Claims 1-5, 15-16, and 25 depend from and include all limitations of claim 1, and the Petition therefore also fails to meet its burden on those claims. Institution on Ground 1 should therefore be denied.

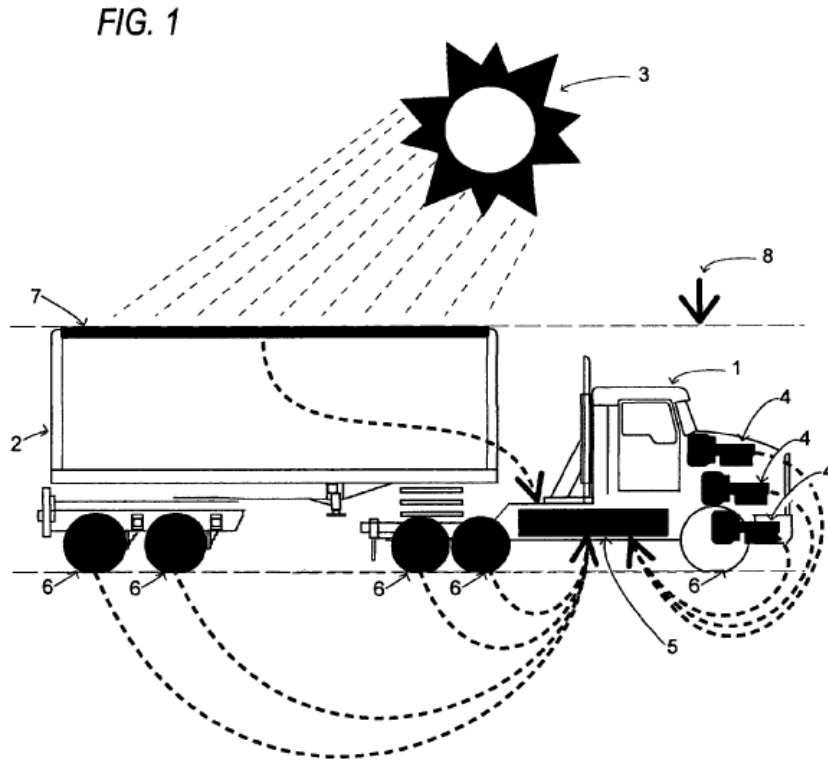
v. Petitioner has also failed to meet its burden as to Claims 3 and 25 because the cabin of Modec would not function in the hybrid combustion engine vehicle of Messano

Claim 3 of the '084 patent recites “wherein the semi-truck vehicle comprises a combustion engine configured to generate power by using combustion energy of fuel” and claim 25 recites “wherein the semi-truck vehicle is a hybrid vehicle comprising electrical and combustion components.” In addition to the reasons detailed in Sections VIII.A.i-iii above, Petitioner has not demonstrated a reasonable likelihood that Modec in view of Messano discloses these limitations at least because, even if Modec discloses the relative positioning limitations and foremost door limitations, which it does not, the cabin of Messano could not simply be replaced by the purported cabin of Modec.

Petitioner notes that Messano “claims ‘[a] hybrid semi-trailer truck system comprising: an electric drive road tractor that incorporates: a multiplicity of constant-speed internal combustion engines maximized for fuel efficiency.’” Pet. at 46; citing Ex. 1005 at 19:28-31. This is the only supporting rationale provided by

either the Petition or Mr. Baker's declaration, which is again identical to the Petition as to this limitation. *See* Ex. 1002 at ¶ 95. The Petitioner presents no evidence or rationale for how the combustion engine features of Messano would be incorporated into the Modec vehicle, or vice versa. Such conclusory, unsupported assertions do not provide a sufficient rationale to combine. *See In re Kahn*, 441 F.3d at 988 (Fed. Cir. 2006).

Moreover, if the Modec cabin were arranged in a way that actually showed the relative positioning limitations, which it is not, replacing the Messano cabin with the Modec cabin would necessitate removing the very combustion engines and combustion components required by claims 3 and 25. FIG. 1 of Messano shows a variety of elements "which lower fuel consumption of a vehicle":



Ex. 1005, 8:11-13, FIG. 1. Those components include three GenSets 4 and a Battery Module 5. *Id.* at 8:16-17. Each of the GenSets consists of an internal combustion engine 13 that drives an electrical generator or alternator 14. *Id.* at 8:50-53. Thus, GenSets 4 are the combustion engines of Messano and are also the combustion components of Messano.

As shown in FIG. 1, GenSets 4 are positioned in front of the cabin, and, more specifically, are positioned approximately in line with the front wheel of Messano, as are conventional combustion engine designs. As such, even if Modec did, as Petitioner asserts, disclose a seat as least partially disposed in front of a rear portion of a rear wheel, that configuration could not be used with the semi-truck of Messano

because of the space taken up by GenSets 4. That is especially true if, as asserted by Petitioner, the door was positioned to allow ingress and egress to the cabin behind the seat. Put simply, a full redesign of the Messano cabin and combustion components would be required to both (i) keep the key combustion components positioned in the front of the truck and (ii) use a cabin with a seat, door, and wheel well having the relative positioning limitations required by claim 1 of the '084 patent, from which claims 3 and 25 depend.

Petitioner has therefore failed to provide a sufficient rationale explaining how the combination of Modec and Messano would be made in a way that renders claims 3 and 25 obvious (*see In re Kahn*, 441 F.3d at 988). Moreover, the proposed combination would not function for its intended purpose and Messano, by use of combustion engines in the front of the vehicle, teaches away from the combination proposed by Petitioner. *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1382 (Fed. Cir. 2007) (“[A] reference teaches away from a combination when using it in that combination would produce an inoperative result.”). For at least these additional reasons, Modec in view of Messano fails to teach or suggest the limitations of claims 3 and 25.

B. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Future Truck Report Render Obvious Claims 13 (Ground 2)

At least because claim 13 depends from and includes all limitations of claim 1, Petitioner has failed to establish a reasonable likelihood of success on Ground 2.

C. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Marlowe Render Obvious Claims 7, 8, 21, and 26 (Ground 3)

At least because claims 7, 8, and 21 depend from and include all limitations of claim 1, Petitioner has failed to establish a reasonable likelihood of success on those claims.

Independent claim 26 recites “at least a portion of the door being positioned behind the first seat, at least a portion of the first seat is disposed to be forward of a line defining the rearmost portion of the front wheel well.” For at least the reasons detailed above in Sections VIII.A.i-iii with respect to claim 1, neither Modec nor Messano, taken alone or in combination, teach or suggest this limitation.

The Petition does not suggest that Marlowe remedies the deficiencies of Modec and Messano. Moreover, Marlowe does in fact fail to remedy the deficiencies of Modec and Messano at least because Marlowe does not disclose “at least a portion of the first seat is disposed to be forward of a line defining the rearmost portion of the front wheel well,” as recited in claim 26.

In addition, the combination of Modec, Messano, and Marlowe fails to disclose or suggest “an entryway provided between the first seat and the second seat, wherein the entryway comprises a vertical height extending from a floor of the cabin to at least a top of the first seat or the second seat” as required by claim 26. The Petition asserts that “a POSITA would read Modec as implicitly disclosing the claimed ‘entryway’ of claim 26.” Pet. at 56-57. The Petition also asserts that “[b]ecause the door [of Modec] is at least partially behind the seat, a POSITA would also understand that there is an entryway behind and between the two seats. . . .” *Id.* at 57. Mr. Baker’s expert analysis is, again, an exact verbatim copy of the Petition, and adds no more rationale or explanation for why a person skilled in the art would “understand that there is an entryway **between** the two seats.” *See* Ex. 1002 at ¶ 120. Thus, it appears that the Petition asserts that it would have been inherent that if Modec did show that a portion of the seat is in front of the rear portion of the wheel well and a portion of the door was positioned behind the seat, which it does not actually show, **and** if a second seat were positioned in the cabin of Modec, it would have been inherent that there would be a passageway between those two seats. But a petitioner cannot carry its burden on inherency merely by showing that a characteristic **may** or **could** be present in the prior art. *In re Oelrich*, 666 F.2d 578, 581-82 (CCPA 1981) (allegations based on “mere probabilities or possibilities” fall short of demonstrating that the missing element is necessarily present).

Petitioner also argues that, even if locating the hypothetical passageway between the seats is not inherently disclosed by Modec, it would have been obvious to provide an entryway between the two seats. In support, the Petition and expert declaration state only that such positioning would be “the most convenient and easiest pathway for the driver to get from the door to the driver seat upon entering the cabin.” Pet. at 58. Ex. 1002 at ¶ 119. This is nothing more than an inherency argument dressed up as obviousness and should be accorded no weight. For example, Petitioner has failed to establish that the seats in the hypothetical modified Modec cabin would be spaced apart from each other near the windows such that there would even be a space between the seats for a passageway.

Thus, Petitioner has also failed to demonstrate a reasonable likelihood that the Modec cabin as modified by Messano and Marlowe discloses a passageway between two seats in a cabin, as required by claim 26.

D. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Eltra Render Obvious Claims 9-11 (Ground 4)

At least because claims 9-11 depend from and include all limitations of claim 1, Petitioner has failed to establish a reasonable likelihood of success on those claims.

E. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Racz Render Obvious Claim 12 (Ground 5)

At least because claim 12 depends from and includes all limitations of claim 1, Petitioner has failed to establish a reasonable likelihood of success on claim 12.

F. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Kia Render Obvious Claim 13 (Ground 6)

At least because claim 13 depends from and includes all limitations of claim 1, Petitioner has failed to establish a reasonable likelihood of success on claim 13.

G. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Marlowe Render Obvious Claim 14 (Ground 7)

At least because claim 14 depends from and includes all limitations of claim 1, Petitioner has failed to establish a reasonable likelihood of success on claim 14.

In addition, the combination proposed by Petitioner would not result in a cabin that meets the limitations of claim 14. Claim 14 recites “wherein the door is located approximately at a midpoint of the body of the semi-truck vehicle to provide ingress and egress into the cabin.” Petitioner asserts that it would have been obvious to modify Modec and Messano to meet this limitation based on the teachings of Messano. Pet. at 66; *see also* Ex. 1002 at ¶¶ 135-136. Petitioner further argues that “[a] person of ordinary skill in the art would have been motivated to modify the combination of Modec and Messano with the door location from Marlowe because locating the door at the midpoint of the body is an obvious design choice, which

provides provide [sic] additional space behind the seat.” Ex. 1002 at ¶ 136; *see also* Pet. at 67. But, as is readily apparent from viewing FIG. 1 of Modec, moving the door of Modec to the midpoint of the body would result in the door being near the front of the wheel well as opposed to “adjacent to a **rearmost** portion of the wheel well,” as required by claim 1:

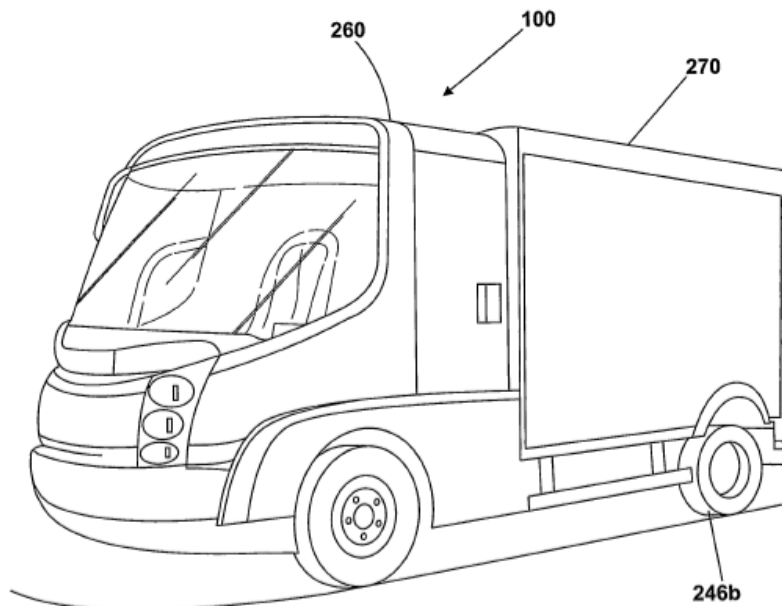


Fig. 1

Ex. 1004 at FIG. 1. Therefore, if the door of Modec were moved as proposed by Petitioner, the relative positioning limitations would not be met, and Marlowe therefore actually teaches away from the features of claim 7. *See In re ICON Health & Fitness*, 496 F.3d at 1382. For this additional reason, Petitioner has failed to establish a reasonable likelihood of success on claim 14.

H. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Plummer Render Obvious Claims 17 and 19 (Ground 8)

At least because claims 17 and 19 depend from and include all limitations of claim 1, Petitioner has failed to establish a reasonable likelihood of success on those claims.

I. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Marlowe Render Obvious Claims 18 and 20 (Ground 9)

At least because claims 18 and 20 depend from and include all limitations of claim 1, Petitioner has failed to establish a reasonable likelihood of success on those claims.

J. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Man Annual Report Render Obvious Claim 22 (Ground 10)

At least because claim 22 depends from and includes all limitations of claim 1, Petitioner has failed to establish a reasonable likelihood of success on claim 22.

K. Petitioner Fails to Establish that There Is a Reasonable Likelihood that Modec, Messano, and Freightliner Render Obvious Claims 23-24 (Ground 9)

At least because claims 23-24 depend from and include all limitations of claim 1, Petitioner has failed to establish a reasonable likelihood of success on those claims.

IX. CONCLUSION

To summarize, the entire Petition rests on the rough drawing shown in FIG. 1 of Modec. That figure that is drawn from an undisclosed angle and is not marked with dimensions, and Modec does not assert that the figure is drawn to scale. As detailed herein, Modec provides no information from which a person of ordinary skill in the art could discern the relative positions of the wheel well, seat, and door shown in Modec FIG. 1. Petitioner's expert merely parrots the exact claim language without any supporting analysis, and neither the Petition nor Petitioner's expert cites any passage of the Modec specification that is relevant to the inquiry into whether Modec discloses the relative positioning limitations, which are required by all claims of the '084 patent. For at least these reasons, the Petition does not establish a reasonable likelihood that any claim of the '084 patent is invalid and should be denied.

In addition, Petitioner's proposed construction of "adjacent to" should be rejected because construction of that term is not necessary to resolve the validity issues presented in the Petition and, even if construction were necessary, neither the intrinsic nor extrinsic evidence support including the negative limitation "but not touching" in the construction.

Appendix A
Table of Exhibits

Exhibit No.	Description
2001	<i>Adjacent</i> , Cambridge Dictionary (2019)
2002	<i>Adjacent</i> , Oxford Learner's Dictionaries (2019)

Appendix B
Certificate of Service

I certify that on January 3, 2020 a copy of this **PATENT OWNER'S PRELIMINARY RESPONSE TO THE PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,077,084** is being filed via PTAB E2E and served on the following Petitioner's counsel by electronic mail this 3rd day of January, 2020.

Petitioner Counsel Service Information:

Ted M. Cannon
Michael L. Fuller
Knobbe, Martens, Olson & Bear, LLP
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Irvine, CA 92614
2tmc@knobbe.com
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January 03, 2020

/C. Matthew Rozier/
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mrozier@swlaw.com
Counsel for Patent Owner

CERTIFICATE OF COMPLIANCE WITH 37 C.F.R. § 42.24

I hereby certify that the word count for the foregoing Patent Owner Preliminary Response totals 8,070 words, excluding the parts which are exempted by 37 C.F.R. § 42.24(a)(1).

January 3, 2020

/C. Matthew Rozier/
C. Matthew Rozier
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Telephone: 602.382.6000
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Counsel for Patent Owner

Exhibit F



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

112802 7590 07/25/2018
 TechLaw Ventures, PLLC
 3290 West Mayflower Way
 Lehi, UTAH 84043
 UNITED STATES OF AMERICA

EXAMINER

SWENSON, BRIAN L

ART UNIT

PAPER NUMBER

3618

DATE MAILED: 07/25/2018

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/396,209	12/30/2016	Trevor R. Milton	BGT-0012.NP	5158

TITLE OF INVENTION: SYSTEMS, METHODS, AND DEVICES FOR AN AUTOMOBILE DOOR OR WINDOW

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	10/25/2018

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

112802 7590 07/25/2018
 TechLaw Ventures, PLLC
 3290 West Mayflower Way
 Lehi, UTAH 84043
 UNITED STATES OF AMERICA

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/396,209	12/30/2016	Trevor R. Milton	BGT-0012.NP	5158

TITLE OF INVENTION: SYSTEMS, METHODS, AND DEVICES FOR AN AUTOMOBILE DOOR OR WINDOW

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	10/25/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
SWENSON, BRIAN L	3618	180-065600

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☐ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (**Please first reapply any previously paid issue fee shown above**)

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/396,209	12/30/2016	Trevor R. Milton	BGT-0012.NP	5158
112802	7590	07/25/2018	EXAMINER	
TechLaw Ventures, PLLC 3290 West Mayflower Way Lehi, UTAH 84043 UNITED STATES OF AMERICA			SWENSON, BRIAN L	
			ART UNIT	PAPER NUMBER
			3618	
DATE MAILED: 07/25/2018				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
 (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/396,209	Applicant(s) Milton et al.	
	Examiner BRIAN L SWENSON	Art Unit 3618	AIA Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 6/21/2018.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-12,15-16,18-27,57 and 59. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov**.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file areply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. <input type="checkbox"/> Notice of References Cited (PTO-892)	5. <input checked="" type="checkbox"/> Examiner's Amendment/Comment
2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____.	6. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance
3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material ____.	7. <input type="checkbox"/> Other ____.
4. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date ____.	

/BRIAN L SWENSON/
Primary Examiner, Art Unit 3618

Application/Control Number: 15/396,209
Art Unit: 3618

Page 2

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

2. In the Claims

3. Claims 28-56 and 58 Cancelled; (these claims are erroneously listed as "withdrawn"; these claims were cancelled in the Preliminary Amendment filed on 4/12/2017);

Allowable Subject Matter

4. Claims 1-12, 15-16, 18-27, 57 and 59 allowed.

5. The following is an examiner's statement of reasons for allowance: The primary reason for the allowance of the claims in this case is the inclusion of: a body for a semi-truck vehicle that includes electric drive train, where the foremost door for entry into the body of the vehicle is adjacent to a rear portion of the front wheel, where the seat for the user of the vehicle is located of the rear portion of the front wheel, in combination with the other elements recited, not found in the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Application/Control Number: 15/396,209

Page 3

Art Unit: 3618

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN L SWENSON whose telephone number is (571)270-5572. The examiner can normally be reached on Monday - Friday (9-5).

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Allen Shriver can be reached on (303) 297-4337. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BRIAN SWENSON
Primary Examiner
Art Unit 3618

/BRIAN L SWENSON/
Primary Examiner, Art Unit 3618

Exhibit G

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	15396209	Filing Date	2016-12-30	Docket Number (if applicable)	BGT-0012.NP	Art Unit	3618
First Named Inventor	Trevor R. Milton			Examiner Name	Brian L. Swenson		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application. Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☒ Amendment/Reply

☐ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☐ The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to
Deposit Account No _____

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature
Applicant Signature

Signature of Registered U.S. Patent Practitioner			
Signature	Terrence J. Edwards/	Date (YYYY-MM-DD)	2018-06-21
Name	Terrence J. Edwards	Registration Number	50254

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8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
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TLV Docket No. BGT-0012.NP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTORS: TREVOR R. MILTON, et al.		RESPONSE TO FINAL OFFICE ACTION WITH REQUEST FOR CONTINUED EXAMINATION TO MARCH 21, 2018 FINAL OFFICE ACTION
TITLE:	SYSTEMS, METHODS, AND DEVICES FOR AN AUTOMOBILE DOOR OR WINDOW	
SERIAL NO.	15/396,209	
FILED:	December 30, 2016	
EXAMINER:	Brian L. Swenson	
ART UNIT:	3618	

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

To The Commissioner For Patents:

Responsive to the Office Action dated March 21, 2018, Applicant presents the following supplemental amendments and remarks. Applicant requests reconsideration of the above-captioned application in view of the following amendments and remarks.

Amendments to the claims begin on page 2 of this Response.

Remarks begin on page 14 of this Response.

In the Claims:

The following listing of patent claims replaces any previous listing of the patent claims. Any amendments to the patent claims are made without prejudice to any future submissions of the original claims.

CLAIMS

1. (Currently Amended) A semi-truck vehicle comprising:
 - an electric drive train;
 - a body;
 - a cabin located within the body of the semi-truck vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person;
 - a seat located in the interior of the cabin that is configured for seating a user; and
 - a door comprising a width extending a horizontal length of the door, wherein the door provides ingress and egress to the interior of the cabin of the semi-truck vehicle;

wherein the door is located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and the width of the door is disposed between the frontmost side of the door and a rearmost side of the door, at least a portion of the door being positioned behind the seat and at least a portion of the seat is disposed to be forward of a line defining the rearmost portion of the front wheel well ~~with respect to the body, such that a majority of the width of the door is located at a backside of the seat when the door is in a closed position,~~ such that the door opens to provide ingress and egress into the cabin from a backside of the seat; and

wherein the door is the foremost door providing ingress or egress into the interior of the cabin.

2. (Previously Presented) The semi-truck vehicle of claim 1, wherein the semi-truck vehicle is an electric vehicle comprising a battery pack that is coupled to an electric drive train.

3. (Previously Presented) The semi-truck vehicle of claim 1, wherein the semi-truck vehicle comprises a combustion engine configured to generate power by using combustion energy of fuel.

4. (Previously Presented) The semi-truck vehicle of claim 1, wherein the semi-truck vehicle comprises only a single door.

5. (Previously Presented) The semi-truck vehicle of claim 4, wherein the single door is located on a left side when the user is seated in the seat of the semi-truck vehicle.

6. (Previously Presented) The semi-truck vehicle of claim 4, wherein the single door is located on a right side when the user is seated in the seat of the semi-truck vehicle.

7. (Previously Presented) The semi-truck vehicle of claim 1, wherein the door of the semi-truck vehicle comprises a first door and a second door.

8. (Previously Presented) The semi-truck vehicle of claim 7, wherein the first door is located on a left side when the user is seated in the seat of the semi-truck vehicle and the second door is located on a right side when the user is seated in the seat of the semi-truck vehicle.

9. (Previously Presented) The semi-truck vehicle of claim 1, wherein the door slides on an upper track, a mid-track, and a lower track located externally on the body of the semi-truck vehicle to open and close the door.

10. (Previously Presented) The semi-truck vehicle of claim 9, wherein the door moves outward with respect to the body and backward with respect to the seat as the door is moved to an open position.

11. (Previously Presented) The semi-truck vehicle of claim 10, wherein an activation signal turns on a drive motor to pull the door open and closed.

12. (Previously Presented) The semi-truck vehicle of claim 1, wherein the door is hinged at one end and attached to the body of the semi-truck vehicle to open and close the door.

13. (Canceled)

14. (Canceled)

15. (Previously Presented) The semi-truck vehicle of claim 1, wherein the door comprises a peak load sensor configured to sense a threshold, such that when a load on the door is higher than the threshold a control unit reverses the direction of the door and keeps the door from closing.

16. (Previously Presented) The semi-truck vehicle of claim 1, wherein the door is located approximately at a midpoint of the body of the semi-truck vehicle to provide ingress and egress into the cabin.

17. (Cancelled).

18. (Previously Presented) The semi-truck vehicle of claim 1, wherein the vehicle is an electric driven class 7 semi-truck.

19. (Previously Presented) The semi-truck vehicle of claim 1, wherein the vehicle is an electric driven class 8 semi-truck.

20. (Previously Presented) The semi-truck vehicle of claim 1, wherein the vehicle further comprises a sleeper within the cabin.

21. (Previously Presented) The semi-truck vehicle of claim 20, wherein the door opens into the sleeper of the cabin.

22. (Previously Presented) The semi-truck vehicle of claim 20, wherein the sleeper comprises a bunk bed, a cooling appliance having a volume that is at least 15 cubic feet, and a microwave oven.

23. (Previously Presented) The semi-truck vehicle of claim 1, wherein the cabin comprises a first seat and a second seat, and wherein access to either of the first seat or the second seat is provided between the second seat and the first seat.

24. (Previously Presented) The semi-truck vehicle of claim 1, wherein an opening into the cabin comprises a clearance that is at least six feet five inches in height.

25. (Previously Presented) The semi-truck vehicle of claim 20, wherein entry into the cabin of the semi-truck vehicle provides full access to the seat and the sleeper simultaneously.

26. (Previously Presented) The semi-truck vehicle of claim 1, wherein the semi-truck vehicle further comprises at least one full-size step and at least one hand hold to provide at least two points of leverage and for access and entry into the interior of the cabin.

27. (Previously Presented) The semi-truck vehicle of claim 26, wherein there are two steps and two handholds that provide four points of leverage for entry into the interior of the cabin, such that a user enters into the cabin facing forward.

28. (Withdrawn) A vehicle comprising:

a body comprising a front end and a rear end;

a plurality of front wheels located proximally with respect to the body and a plurality of rear wheels located distally with respect to the body, wherein the front wheels comprise a first rear most location that is a first distance from the front end of the body and a second front most location that is a second distance from the front end of the body, wherein the first distance is greater than the second distance;

a cabin located within the body, wherein the cabin comprises an interior with at least one seat located in the interior that is configured for seating at least one person;

wherein a majority of the at least one seat is located within the first distance of the front wheels.

29. (Withdrawn) The vehicle of claim 28, wherein the body of the vehicle comprises a plurality of front wheel wells that correspond to the plurality of front wheels, wherein the front wheel wells comprise a front most portion and a rear most portion with a horizontal distance therebetween,

wherein the entirety of the at least one seat is located within the horizontal distance of the front wheel wells.

30. (Withdrawn) The vehicle of claim 28, further comprising at least one door that provides ingress and egress to the interior of the cabin, wherein the at least one door is located with respect to the body, such that the at least one door opens to provide ingress and egress into the cabin from a backside of the at least one seat.

31. (Withdrawn) The vehicle of claim 30, wherein the body of the vehicle comprises an opening having a width and a height that corresponds with the at least one door, wherein there is no seat inside the cabin that obstructs the width of the opening.

32. (Withdrawn) The vehicle of claim 28, wherein the vehicle is an electric vehicle comprising a plurality of electric motors and a plurality of gear trains that each correspond with each of the plurality of electric motors.

33. (Withdrawn) The vehicle of claim 28, wherein the vehicle comprises a combustion engine configured to generate power by using combustion energy of fuel.

34. (Withdrawn) The vehicle of claim 28, further comprising a single door that provides ingress and egress to the interior of the cabin of the vehicle.

35. (Withdrawn) The vehicle of claim 34, wherein the single door is located on a driver's side of the vehicle.

36. (Cancelled)

37. (Withdrawn) The vehicle of claim 28, further comprising a first door and a second door that each provide ingress and egress to the interior of the cabin of the vehicle.

38. (Withdrawn) The vehicle of claim 37, wherein at least one of the first door or the second door slides on an upper track, a mid-track, and a lower track located externally on the body of the vehicle to open and close the at least one door.

39. (Withdrawn) The vehicle of claim 38, wherein the at least one of the first door or the second door moves outward with respect to the body and backward with respect to the at least one seat as the door is moved to an open position.

40. (Withdrawn) The vehicle of claim 37, wherein the first door is located on a driver's side of the vehicle and the second door is located on a passenger's side of the vehicle.

41. (Withdrawn) The vehicle of claim 38, wherein an activation signal turns on a drive motor to pull the at least one door open and closed.

42. (Withdrawn) The vehicle of claim 28, further comprising at least one door that provides ingress and egress to the interior of the cabin of the vehicle and wherein the at least one door is hinged at one end and attached to the body of the vehicle to open and close the at least one door.

43. (Withdrawn) The vehicle of claim 28, further comprising at least one door that provides ingress and egress to the interior of the cabin of the vehicle and wherein the at least one door is the foremost door providing ingress or egress into the interior of the cabin.

44. (Withdrawn) The vehicle of claim 28, further comprising at least one door that provides ingress and egress to the interior of the cabin of the vehicle and wherein there is no additional door that is located in front of the at least one door providing ingress or egress into the interior of the cabin.

45. (Withdrawn) The vehicle of claim 28, further comprising at least one door that provides ingress and egress to the interior of the cabin of the vehicle and wherein the at least one door comprises a peak load sensor configured to sense a threshold, such that when a load on the at least one door is higher than the threshold a control unit reverses the direction of the at least one door and keeps the at least one door from closing.

46. (Withdrawn) The vehicle of claim 28, further comprising at least one door that provides ingress and egress to the interior of the cabin of the vehicle and wherein the at least one door is located approximately at a midpoint of the body of the vehicle to provide ingress and egress into the cabin.

47. (Withdrawn) The vehicle of claim 28, wherein the vehicle is a semi-truck.

48. (Withdrawn) The vehicle of claim 28, wherein the vehicle is an electric driven class 7 semi-truck.

49. (Withdrawn) The vehicle of claim 28, wherein the vehicle is an electric driven class 8 semi-truck.

50. (Withdrawn) The vehicle of claim 28, wherein the vehicle further comprises a sleeper within the cabin.

51. (Withdrawn) The vehicle of claim 50, wherein the sleeper comprises a bunk bed, a refrigerator having a volume that is at least 15 cubic feet, a table, and a microwave oven.

52. (Withdrawn) The vehicle of claim 50, further comprising at least one door that provides ingress and egress to the interior of the cabin of the vehicle and wherein entry into the cabin of the vehicle provides full access to the at least one seat and the sleeper simultaneously.

53. (Withdrawn) The vehicle of claim 28, wherein an opening into the cabin comprises a height that is at least six feet five inches.

54. (Withdrawn) The vehicle of claim 28, wherein the cabin comprises a driver's seat and a passenger's seat, wherein access to either of the driver's seat or the passenger's seat is provided between the passenger's seat and the driver's seat.

55. (Withdrawn) The vehicle of claim 28, wherein the vehicle further comprises at least one full-size step and at least one hand hold to provide at least two points of leverage and for access and entry into the interior of the cabin.

56. (Withdrawn) The vehicle of claim 28, wherein there are two steps and two hand holds that provide four points of leverage for entry into the interior of the cabin, such that a user enters into the cabin facing forward.

57. (Previously Presented) The semi-truck vehicle of claim 1, wherein the semi-truck vehicle is a hybrid vehicle comprising electrical and combustion components.

58. (Withdrawn) The vehicle of claim 28, wherein the vehicle is a hybrid vehicle comprising electrical and combustion components.

59. (Currently Amended) A semi-truck vehicle comprising:

an electric drive train;

a body;

a cabin located within the body of the vehicle, wherein the cabin comprises an interior that is configured to accommodate at least one person;

a first seat and a second seat located in the interior of the cabin;

a door that provides ingress and egress to the interior of the cabin, the door being located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and at least a portion of the door being positioned behind the first seat, at least a portion of the first seat is disposed to be forward of a line defining the rearmost portion of the front wheel well; and

an entryway provided between the first seat and the second seat, wherein the entryway comprises a vertical height extending from a floor of the cabin to at least a top of the first seat or the second seat;

wherein the entryway provides access to either of the first seat or the second seat.

REMARKS

In the Office Action, the Patent Office: 1) rejected claims 13 and 14 under 35 U.S.C. § 112 as allegedly being of improper dependent form; 2) rejected claims 1-8, 12-14, 15, 18-25, and 57 under 35 U.S.C. § 103 as allegedly unpatentable in view of U.S. Patent Publication 2008/0191515 (“Hollenbeck”) in view of U.S. Patent Publication No. 2011/0114398 (“Bianco”) and U.S. Patent Publication No. 2011/0121606 (“Engelbrecht”); 3) rejected claims 9-11 and 15 under 35 U.S.C. § 103 as allegedly unpatentable over Hollenbeck, Bianco, and Engelbrecht in view of U.S. Patent No. 6,904,717 (“Clark”); 4) rejected claims 26 and 27 under 35 U.S.C. § 103 as allegedly unpatentable over Hollenbeck, Bianco, and Engelbrecht in view of U.S. Patent No. 7,637,557 (“Regnell”); and 5) rejected claim 59 under 35 U.S.C. § 103 as allegedly unpatentable over U.S. Patent No. 9,108,688 (“Stutz”) in view of Bianco.

Claims 1-12, 15, 16, 18-27, 57, and 59 are pending. Claims 13, 14, 17, and 36 have been canceled without prejudice or disclaimer. Claims 28-35, 37-56, and 58 are currently withdrawn. Various claims have been amended in this reply. Any amendments to the patent claims are made without prejudice to any future submission of the original claims in another application. No new matter has been added to the claims.

Every ground of rejection has been addressed by this Response and Applicant respectfully requests that the amendments and remarks presented in this Response be entered and the claims be found allowable. Applicant expresses appreciation for the guidance given by the Examiner in the March 21, 2018 Office Action.

Interview Summary:

Applicant wishes to thank Examiner Swenson for the courtesy extended in conducting the interview that took place June 13, 2018. During the interview, the Examiner and Applicant's representative discussed claim amendments that would overcome the cited references. Examiner Swenson indicated that the provided amendments would overcome the rejections of Hollenbeck, Bianco, and Engelbrecht. Accordingly, the amendments discussed during the interview of June 13, 2018 have been included above. While no agreement was reached with respect to the allowability of the claims, Applicant respectfully submits that the claims are allowable.

I. ISSUES RAISED UNDER 35 U.S.C. §112 ARE TREATED.

Claims 13 and 14 are rejected as being written in an improper dependent form. While Applicant does not necessarily agree with the propriety of the rejection, claims 13 and 14 have been canceled. Thus, the rejection of claims 13 and 14 is moot.

II. ISSUES RAISED UNDER 35 U.S.C. §103(a) ARE TREATED.

Applicant respectfully traverses the rejections made in the Office Action and reserves the right to file the originally filed patent claims in another application. The amendments provided herein are to advance prosecution only and are not an admission that the claims as originally filed are not allowable as originally filed.

Counsel has carefully studied the references relied upon in the March 21, 2018 Office Action. Counsel respectfully submits that the references relied upon do not anticipate certain aspects of the claims or render aspects of the claims obvious. Applicant submits that the currently

amended claims are allowable and a finding of the same is respectfully requested. Applicant provides the following arguments in support of patentability of the claims presented.

The Office Action Fails To Make A Prima Facie Case That The Claims Are Rendered Obvious By The Cited Art: Applicant respectfully traverses the rejections for at least the reason that the Office Action fails to present a *prima facie* case that the claims are anticipated or rendered obvious by the cited art. Under the guidelines in the MPEP, the Office Action must establish that the references teach or suggest each and every claim element or explain “why the difference(s) between the prior art and the claim invention would have been obvious.” The Office Action does neither.

On pages 3-4 of the Office Action, the Patent Office alleges that Hollenbeck teaches “at least one door (31) is located with respect to the body, such that a majority of the width of the door is located at a backside of the seat (compare the relative position of the door 31 in Figure 1 and the placement of the seat in Figure 2) when the door is closed, such that the at least one door opens to provide ingress and egress into the cabin from a backside of the at least one seat (see Figure 1 where the door is shown to be located behind where the seat is shown in Figure 2).”

Hollenbeck teaches a “truck with cab having [a] longitudinally oriented bunk” in which the “longitudinal axis extend[s] parallel to a longitudinal axis of the truck.” Hollenbeck, Title and Abstract. To that end, in Figure 1, Hollenbeck illustrates a door 31 which is disclosed to be “provided in a longitudinal wall of the sleeper cab 27 [and] may be provided instead of or in addition to the passage 29 between the driver’s portion 25 and the sleeper cab.” Hollenbeck, paragraph [0012].

Applicant respectfully submits, however, that Hollenbeck does not disclose or suggest that the “door” is “located on the body such that a *frontmost side of the door is adjacent to a rearmost portion of a front wheel well* and the width of the door is disposed between the frontmost side of the door and a rearmost side of the door, *at least a portion of the door being positioned behind the seat*,” as recited in claim 1 (emphasis added). As illustrated in Hollenbeck, door 31 is not “adjacent to the rearmost portion of a front wheel well.” Accordingly, Hollenbeck fails to disclose or suggest this element of claim 1.

Further, Applicant respectfully submits that Hollenbeck does not disclose or suggest that the seat, or even a portion thereof, located in the driver’s portion 25 of Hollenbeck is “*disposed to be forward of a line defining the rearmost portion of the front wheel well*,” as recited in claim 1 (emphasis added).

Neither Bianco nor Engelbrecht remedy the deficiencies of Hollenbeck identified above. For example, Bianco teaches a “battery power system for plug in hybrid tractor trailers” which is apparently silent as to a location for a “door” to a cab, failing to show a door explicitly in the figures. Bianco, Title. Further, Bianco fails to indicate the exact placement of a seat. Engelbrecht, on the other hand, teaches a “recreational vehicle having [a] chassis with integral cap” which provides a door 37. However, as shown in at least Figure 3 and Figure 6 of Engelbrecht, door 37 is not located “adjacent to a front wheel well.” Further, Engelbrecht fails to indicate the exact placement of a seat. Accordingly, Applicant respectfully submits that Bianco and Engelbrecht fail to disclose or suggest the elements of claim 1 whether taken individually or in combination with each other or Hollenbeck.

Because the Office Action fails to show that the references teach or suggest each and every claim element and fails to explain why the differences between the prior art and the claimed invention would have been obvious to a person of skill in the art, the Office Action fails to present a *prima facie* case that the claims are anticipated or rendered obvious by the cited art. The rejections are thus improper. Applicant respectfully requests that Examiner withdraw the rejections under 35 U.S.C. § 103.

Claims 2-12, 15, 16, 18-27, and 57 depend directly or indirectly from claim 1. Further, neither Clark nor Regnell remedy the deficiencies of claim 1 discussed above. Thus, Applicant respectfully submits that claims 2-12, 15, 16, 18-27, and 57 are not only allowable for the subject matter recited therein, but also at least due to their respective dependencies on claim 1. Claims 13 and 14 have been canceled. Thus, the rejection of claims 13 and 14 is moot.

With respect to independent claim 59, Applicant further submits that the Patent Office has not established a *prima facie* case of obviousness with respect to claim 59.

On page 10 of the Office Action, the Patent Office alleges that “Stutz does not explicitly show a door for allowing a user to enter and exit the cabin, however the semi-truck vehicle inherently has a door to allow a user to enter the cabin in order to operate the vehicle.” While Applicant does not necessarily agree with this allegation, especially in view of the advent of autonomous vehicles, Applicant has amended claim 59 to recite “a door that provides ingress and egress to the interior of the cabin, *the door being located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and at least a portion of the door being positioned behind the first seat*” (emphasis added).

Applicant submits that even if it is inherent that a vehicle has a door, which Applicant does not concede, there is no reason why one of ordinary skill in the art would be motivated, in view of the prior art, to locate a door “such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and at least a portion of the door being positioned behind the first seat,” as recited in claim 59.

Bianco fails to remedy the deficiencies of Stutz. As noted above, it appears that Bianco fails to explicitly disclose a door at all in view of at least the figures of Bianco. Thus, Bianco cannot be said to disclose or suggest “a door that provides ingress and egress to the interior of the cabin, the *door being located on the body such that a frontmost side of the door is adjacent to a rearmost portion of a front wheel well and at least a portion of the door being positioned behind the first seat,*” as recited in claim 59 (emphasis added).

Further, Applicant respectfully submits that Stutz does not disclose or suggest that the first seat 27 is “*disposed to be forward of a line defining the rearmost portion of the front wheel well,*” as recited in claim 59 (emphasis added). Bianco fails to remedy the deficiencies of Stutz because Bianco fails to indicate the exact placement of a seat, as mentioned previously. As a result, neither Stutz nor Bianco can be said to disclose that “at least a portion of the first seat is *disposed to be forward of a line defining the rearmost portion of the front wheel well,*” as recited in claim 59 (emphasis added).

Because the Office Action fails to show that the references teach or suggest each and every claim element and fails to explain why the differences between the prior art and the claimed invention would have been obvious to a person of skill in the art, the Office Action fails to present

a *prima facie* case that the claims are anticipated or rendered obvious by the cited art. The rejections are thus improper. Applicant respectfully requests that Examiner withdraw the rejections under 35 U.S.C. § 103.

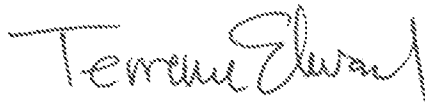
III. CONCLUSION.

In view of the foregoing, Applicant believes that all the pending claims are allowable and a finding of the same is respectfully requested.

If any impediment to allowance of these claims remains after entry of this RESPONSE WITH AMENDMENT TO MARCH 21, 2018 OFFICE ACTION, and such impediment could be alleviated during a telephone interview, the Examiner is invited to initiate the same with the undersigned.

DATED this 21th day of June 2018.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Terrence Edwards", with a stylized flourish at the end.

Terrence J. Edwards
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Electronic Patent Application Fee Transmittal

Application Number:	15396209			
Filing Date:	30-Dec-2016			
Title of Invention:	SYSTEMS, METHODS, AND DEVICES FOR AN AUTOMOBILE DOOR OR WINDOW			
First Named Inventor/Applicant Name:	Trevor R. Milton			
Filer:	Terrence J. Edwards			
Attorney Docket Number:	BGT-0012.NP			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
RCE- 1ST REQUEST	2801	1	650	650
Total in USD (\$)				650

Electronic Acknowledgement Receipt

EFS ID:	32970418
Application Number:	15396209
International Application Number:	
Confirmation Number:	5158
Title of Invention:	SYSTEMS, METHODS, AND DEVICES FOR AN AUTOMOBILE DOOR OR WINDOW
First Named Inventor/Applicant Name:	Trevor R. Milton
Customer Number:	112802
Filer:	Terrence J. Edwards
Filer Authorized By:	
Attorney Docket Number:	BGT-0012.NP
Receipt Date:	21-JUN-2018
Filing Date:	30-DEC-2016
Time Stamp:	18:35:20
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 650
RAM confirmation Number	062218INTEFSW18364201
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	RCE_BGT0012NP.pdf	1322793	no	3
			395ad19d1348d2ecce2c655a5c24124fa9373379		

Warnings:**Information:**

2	Applicant Arguments/Remarks Made in an Amendment	Response_to_OA_after_AFCP_Interview.pdf	114141	no	20
			00d705b38ffbfa9f802640f87981f464b6124ebd		

Warnings:**Information:**

3	Fee Worksheet (SB06)	fee-info.pdf	30609	no	2
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Warnings:**Information:**

Total Files Size (in bytes):			1467543
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

CERTIFICATE OF SERVICE

I am a citizen of the United States, over the age of eighteen years, and not a party to the within action. I am employed in the County of San Francisco, State of California, and my business address is Steyer Lowenthal Boodrookas Alvarez & Smith LLP, 235 Pine Street, 15th Floor, San Francisco, California 94104.

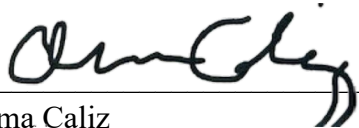
On the date set forth below, I served a true and correct copy of the following document(s):

**PLAINTIFF NIKOLA CORP.'S OPENING CLAIM CONSTRUCTION BRIEF
PURSUANT TO LOCAL PATENT RULE 4.2**

☒ By transmitting the above documents to the Clerk's Office using the CM/ECF System for filing and transmittal of a Notice of Electronic Filing to CM/ECF registrants.

I certify under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on June 18, 2021


Alma Caliz